

INTERNATIONAL BOUNDARY AND WATER COMMISSION
UNITED STATES AND MEXICO

UNITED STATES SECTION

LELAND H. HEWITT, *Commissioner*
P. O. Box 1859
El Paso, Texas

KARL F. KEELER, *Chief of Hydrography*
P. O. Box 1564
Laredo, Texas

MEXICAN SECTION

DAVID HERRERA JORDAN, *Commissioner*
219 North Lerdo Avenue
Cd. Juárez, Chihuahua
HORACIO VIDRIO PEREZ, *Chief of Hydrography*
2723 González Street
Nuevo Laredo, Tamaulipas

WATER BULLETIN NUMBER 27

Flow of the Rio Grande and Related Data

*From Elephant Butte Dam, New Mexico
to the Gulf of Mexico*

1957

STORAGE IN MAJOR RESERVOIRS

SOURCES OF RIVER FLOW

DIVERSIONS

SUSPENDED SILT

CHEMICAL ANALYSES

SANITARY ASPECTS OF WATER QUALITY

METEOROLOGIC DATA

DRAINAGE BASIN AND IRRIGATED AREAS

CONTENTS

	Page
Foreword and Acknowledgments	3
General Hydrologic Conditions for 1957	4
Map - Rio Grande Drainage Basin - San Marcial to the Gulf of Mexico	54
Quantity of Water	
Stream-Flow Records	
Rio Grande below Elephant Butte Dam	5
below Caballo Dam	6
at El Paso	7
below American Dam	8
at Island Station	9
at County Line Station	10
at Fort Quitman	11
at Upper Presidio Station	12
Tributary - Río Conchos near Ojinaga	13
Alamito Creek near Presidio	14
at Lower Presidio Station	15
Tributary - Terlingua Creek near Terlingua	16
at Johnson Ranch	17
at Langtry	18
Tributary - Pecos River near Shumla	19
Goodenough Spring near Comstock	20
Upper Devils River Station	21
Devils River near Del Rio	22
Devils River near Mouth	23
below Diablo Dam Site	24
Tributary - Arroyo las Vacas near Cd. Acuña	25
San Felipe Creek near Del Rio	26
below Maverick Dam	27
Tributary - Pinto Creek near Del Rio	28
Río San Diego at Jiménez	29
Río San Rodrigo near El Moral	30
Return Flow at Power Plant near Eagle Pass	31
at Eagle Pass	32
Tributary - Río Escondido at Villa de Fuente	33
at San Antonio Crossing near Villa Guerrero	34
at Laredo	35
Tributary - Río Salado at Las Tortillas	36
at Chapeño	37
Tributary - Río Alamo at Cd. Mier	38
Contributions from Río San Juan	39
at Fort Ringgold, Rio Grande City	42
below Anzaldúa Dam	43
Floodways - United States and Mexico	44
Tributary - Return Flow at Poniente Drain West of Reynosa, Tamaulipas	45
at Progreso Bridge	46
near San Benito	47
at Lower Brownsville	48
Tributary - Outfalls from Wells and Sewers	49
Stored Water in Large Reservoirs of the Rio Grande Basin - United States and Mexico	50
Sources of River Flow	53
Diversions from the Rio Grande - American Canal at El Paso, Texas	56
Acequia Madre near Juárez, Chihuahua	57
Maverick Canal at Mile 13, near Quemado, Texas	58
Maverick Canal Extension, near Eagle Pass, Texas	59
U.S. Side Below Fort Ringgold, Rio Grande City, Texas	60
Anzaldúa Canal near Reynosa, Tamaulipas	61
Municipal Water Uses - United States and Mexico	62
Quality of Water	
Suspended Silt in the Rio Grande and Tributaries	64
Chemical Analysis of Water Samples from the Rio Grande and Tributaries	68
Electrical Conductivity of Water Samples	72
Rio Grande Salt Burden	78
Sanitary Aspects of Water Quality	79
Climatological Data and Drainage Basin and Irrigated Areas	
Rainfall on the Rio Grande Watershed - United States	81
Rainfall on the Rio Grande Watershed - Mexico	87
Average Rainfall on Subdivisions of the Rio Grande Watershed	94
Location of Rainfall Stations on the Rio Grande Watershed - United States and Mexico	95
Evaporation in the Rio Grande Basin - United States and Mexico	99
Temperature, Humidity, and Wind - United States and Mexico	101
Drainage Basin Area Above Each Gaging Station and Corresponding Irrigated Areas	103
Supplementary Data—International Falcon Reservoir	
Deduced Inflows and Daily Storage	105
Corrections to Previous Water Bulletins	
Corrections to Previous Water Bulletins	107

FOREWORD

This bulletin presents the twenty-seventh compilation of the stream discharges and related data concerning the international portion of the Rio Grande, prepared jointly by the United States and Mexican Sections of the International Boundary and Water Commission. The stream-flow data and kindred subjects pertain to the Rio Grande and its important tributaries near their confluence with the main stream from Elephant Butte, New Mexico to the Gulf of Mexico. The first publication in the series was Water Bulletin No. 1 for the year 1931. The present volume contains the information for the year 1957.

International stream gaging on the Rio Grande was initiated in 1889, when the station at El Paso, Texas was established. A number of stations on the Rio Grande and its tributaries downstream from El Paso was established in 1900 and operated until 1914. Between 1914 and 1923, except for a few months in 1919 and 1920, all stream-gaging work on the international reach of the river was suspended. In 1923, the work was resumed and carried on independently by the two countries until 1931, when the present joint program of stream measurements was adopted.

During 1957, the United States Section of the Commission operated the stream-gaging stations on the Rio Grande at El Paso, American Dam, Island, County Line, Fort Quitman, Upper Presidio, Lower Presidio, Johnson Ranch, Langtry, Below Diablo Dam Site, San Antonio Crossing, Chapeño, Fort Ringgold, San Benito, and Lower Brownsville. The Mexican Section operated the stream-gaging stations on the main stream at Below Maverick Dam, Eagle Pass, Laredo, Below Anzalduas Dam Site, and Progreso. Each Section operated the gaging stations on tributary streams, floodways, and diversions within its own country.

The total drainage area within the outer rim of the Rio Grande Basin is 335,500 square miles. However, nearly one-half of this area yields no runoff to the river, the estimated productive area of the watershed being 182,215 square miles. Reservoirs in the basin have a total storage capacity of approximately 8,700,000 acre-feet, in addition to the International Falcón Reservoir, which has a conservation capacity of 2,400,000 acre-feet. A present rounded total of 2,170,000 acres is irrigated below Elephant Butte Dam on the Rio Grande and below Girvin on the Pecos River. The residual flow from the Rio Grande that escaped to the Gulf of Mexico prior to construction of Falcón Dam averaged 2,600,000 acre-feet per year for the period 1934-1952. For the period 1953-1957, the residual flow has averaged 198,000 acre-feet per year.

Acknowledgments

Other agencies which have contributed to some part of the data published herein include: The Agricultural Research Service and the Soil Conservation Service of the U.S. Department of Agriculture; the Bureau of Reclamation and the Geological Survey of the U.S. Department of the Interior; the Weather Bureau of the U.S. Department of Commerce; the Texas Board of Health; the Colorado State Engineer; the New Mexico State Engineer; the Red Bluff Water Power Control District; the Willacy County Water Control and Improvement District No. 1; the El Paso Department of Water and Sewerage; the Laredo City Water Department; the Special Water Master of the 93rd District Court of Texas; the Ministry of Hydraulic Resources of Mexico; the Meteorological Service of Mexico; the Northern Electric Power Company of Mexico, S.A.; the Federal Board of Public Improvement Works of Nuevo Laredo, Tamaulipas; and the Water and Drainage Board of Matamoros, Tamaulipas.

Additional contributions have been made by individuals and corporations and specific notation is made for such, as well as for those of the above-named agencies, where the data appear. The courtesy and cooperation of those who made these contributions are acknowledged with our appreciation.

GENERAL HYDROLOGIC CONDITIONS FOR 1957

Along and Adjacent to the International Portion of the Rio Grande

During the year 1957, temperatures were about normal on the watershed of the Rio Grande below El Paso, Texas. Evaporation averaged 93% of normal. Precipitation averaged 98% of normal from El Paso to Diablo Dam Site, 114% from Diablo Dam Site to Falcón Dam, 109% from Falcón Dam to Rio Grande City, and 93% in the Lower Rio Grande Valley on the United States side.

The yearly volume of flow of the Rio Grande below El Paso, Texas ranged from 2% of normal at County Line Station to normal at Eagle Pass Station. From Eagle Pass to Falcón Dam, the volume of flow was above normal with Laredo Station recording 109% of the normal flow. All flows passing Rio Grande gaging stations below Falcón Dam were largely regulated by releases from Falcón Reservoir. The flow at Chapeño Gaging Station was 50% of the synthetic 17-year normal flow at this point.

The total annual flow of the measured tributaries below Fort Quitman was 83% of normal. The total flow of these tributaries in the United States was 1,359,200 acre-feet, or 139% of normal. For Mexico, the total measured tributary flow, excluding Río Alamo and Río San Juan, was 630,500 acre-feet, or 44% of normal.

Return flow to the Rio Grande at Maverick Power Plant near Eagle Pass was 536,800 acre-feet, or 104% of the 9-year average. The return flow of 533,250 acre-feet at Poniente Drain consisted largely of Rio Grande water by-passed to facilitate construction of Anzaldúa Dam.

No floods of consequence occurred on the Rio Grande in 1957. Worthy of note, however, was the series of thunderstorms causing widespread rains in April, May, and the first part of June which marked the end of the prolonged drought on the watershed. As a result of these rains, the volume of flow passing all river gaging stations between Langtry and Falcón Reservoir exceeded the previous monthly maximum in both April and May. In the same reach, the combined April and May tributary contributions were 409% of normal. On May 11, a peak flow of 85,100 second-feet at Below Diablo Dam Site Gaging Station was the highest recorded during 1957. No flood damage occurred.

For all reservoirs in the Rio Grande Basin having capacity greater than 15,000 acre-feet, excepting Bluewater Reservoir and International Falcón Reservoir, the average amount of water in storage in 1957 was 1,837,000 acre-feet, or 51% of the normal 3,617,700 acre-feet. In the United States, stored water in these reservoirs averaged 43% of normal while in Mexico the average was 55% of normal. There was an increase in storage of 1,490,700 acre-feet in International Falcón Reservoir. Storage varied from a low of 143,500 acre-feet on February 16 to a high of 1,973,900 acre-feet during several days at the end of June and averaged 1,228,300 acre-feet during the year, or 117% of a synthetic 17-year normal.

Diversions from the Rio Grande in the United States were, on the average, 82% of normal. Diversions into the American Canal were 33% of normal; into Maverick Canal 98% of normal; and in the United States below Fort Ringgold 86% of normal. In Mexico, diversions averaged 122% of normal. Diversions into Acequia Madre were 48% of normal while diversions through the Anzaldúa Canal for irrigation in Mexico were 128% of the 6-year average.

In 1957, the total reported irrigated acreage from the Rio Grande and its tributaries below El Paso, Texas showed an increase from the previous year. Overall, there was an increase of 14% in the United States and an increase of 2% in Mexico.

On the United States side, there was an increase of 1% above Falcón Dam and an increase of 16% from Falcón Dam to the Gulf. On the Mexican side, there was a 3% decrease above Falcón Dam and a 4% increase between Falcón Dam and the Gulf.

The 1957 investigation of the quality of Rio Grande water extended from El Paso to Lower Brownsville. The annual tonnage of salts, or total dissolved solids, carried by the river above Falcón Dam was 58% of the 1935-1957 normal. The volume of suspended silt transported by the Rio Grande in 1957 was about 81% of the normal for sampling stations above Falcón Dam.

RIO GRANDE BELOW ELEPHANT BUTTE DAM, NEW MEXICO

DESCRIPTION: Water-stage recorder, 3,800 feet below Elephant Butte Dam, and cable with sit-down cable car and winch, 100 feet below the recorder. Elephant Butte Dam is 135.1 river miles above the American Dam at El Paso, Texas. The zero of the gage is 4,242.09 feet above mean sea level, U.S.C. & G.S. datum.

RECORDS: Based on 47 current meter measurements during the year and a continuous record of gage heights. Records, marked "Subject to Revision", were furnished by the United States Geological Survey. Records available: January 1915 through December 1957.

REMARKS: Reservoirs, diversions, and drainage returns modify the river flow at this station. Beginning December 1940, hydroelectric power generation facilities for 27,000 kva were placed in operation at Elephant Butte Dam.

EXTREME FLOWS FROM RECORDS:

Average Flow in Second-Feet

Daily:	Max. 8,220	May 22, 1942	Min. 0	Occasionally
Monthly:	Max. 7,600	May 1942	Min. 2.7	Sept. 1954
Yearly:	Max. 2,510	1942	Min. 293	1955

Mean Daily Discharge in Second-Feet 1957 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	* Nov.	* Dec.
1	6.6	6.1	5.6	928	11.0	8.2	1,260	1,850	458	* 8.2	4.0	7.0
2	6.1	6.1	5.6	919	10.0	8.2	1,260	1,990	595	* 8.0	4.0	7.0
3	5.6	6.1	5.2	728	10.0	8.8	1,460	2,200	591	* 8.0	4.0	7.0
4	5.6	6.1	5.2	686	10.0	8.2	1,870	2,200	418	* 8.0	5.0	8.0
5	5.6	5.6	5.2	573	10.0	406	1,880	1,720	580	* 7.0	5.0	8.0
6	5.6	5.6	5.6	606	10.0	1,670	1,880	921	576	* 7.0	5.0	8.0
7	5.6	6.1	4.7	610	9.4	1,940	1,890	1,580	580	* 7.0	6.0	9.0
8	6.1	5.2	5.6	602	10.0	2,030	1,890	1,640	573	7.1	6.0	9.0
9	6.1	5.2	4.7	602	8.2	2,020	2,060	1,750	576	6.1	6.0	9.0
10	5.2	5.2	5.2	802	7.1	2,020	2,270	2,140	819	6.6	7.0	10.0
11	5.6	5.2	6.1	808	6.6	2,020	2,320	2,190	1,420	5.6	7.0	10.0
12	5.6	5.2	6.6	812	6.6	2,010	2,310	1,250	1,420	* 6.0	7.0	10.0
13	5.6	5.6	6.1	806	6.6	2,000	2,240	1,630	1,970	* 6.0	7.0	10.0
14	5.6	5.6	6.6	817	6.6	2,000	1,900	2,380	2,490	* 7.0	7.0	9.0
15	5.6	5.6	6.1	692	6.6	2,000	1,690	2,510	2,460	* 8.0	7.0	9.0
16	5.6	6.1	6.1	662	7.1	1,990	1,510	2,500	1,710	* 8.0	7.0	8.0
17	6.1	6.1	5.6	526	7.1	1,990	1,510	1,710	1,030	* 8.0	7.0	8.0
18	6.1	6.6	5.6	508	7.7	1,980	1,710	2,070	1,020	* 8.0	7.0	7.0
19	6.1	6.6	5.2	312	7.7	1,990	2,080	1,280	1,020	* 8.0	7.0	7.0
20	6.1	6.1	532	146	7.7	1,850	2,080	1,280	1,170	* 8.0	7.0	7.0
21	6.6	6.1	998	154	8.2	1,540	2,070	1,260	1,060	* 8.0	7.0	7.0
22	6.1	6.1	998	134	8.2	1,130	2,070	1,280	510	* 8.0	7.0	7.0
23	6.1	6.1	998	160	9.4	1,120	2,090	1,300	9.4	* 8.0	7.0	7.0
24	6.1	5.6	998	146	8.8	1,030	2,080	1,320	9.4	* 8.0	7.0	8.0
25	6.6	6.1	998	150	8.2	1,050	1,330	1,130	9.4	* 8.0	7.0	9.0
26	6.6	5.6	1,000	145	8.2	1,030	652	880	9.4	* 8.0	7.0	9.0
27	6.6	5.6	956	155	8.2	1,030	584	1,300	8.2	* 7.0	7.0	9.0
28	7.7	5.2	904	340	8.2	1,030	584	1,300	8.2	* 5.0	7.0	9.0
29	6.6	909	340	8.2	1,040	1,010	1,840	8.2	* 5.0	7.0	10.0	
30	7.1	911	130	8.2	1,030	1,340	1,310	8.2	* 4.0	7.0	10.0	
31	6.1	908		8.2		1,720	526		* 4.0		11.0	
Sum			162.4	14,999	40,979.4	50,237	218.6	263.0				
188.3			11,216.6	258.0	52,600	22,657.4	192.0					

Current Year 1957

Period 1924-1957

Month	Extreme Gage Feet			Extreme Second-Feet		Average Second-Feet	Total Acre-Feet	Acre-Feet			
	High	Low	Day	High	Low			Average	Maximum	Minimum	
Jan.				28	7.7	10	5.2	6.1	373	24,688	86,500
Feb.				+18	6.6	+8	5.2	5.8	322	35,526	83,600
Mar.				26	1,000	+7	4.7	362	22,200	60,613	95,300
Apr.				1	928	30	130	500	29,800	90,782	162,000
May				1	11.0	+11	6.6	8.3	512	92,009	467,000
June				8	2,030	+1	8.2	1,370	81,300	105,079	363,000
July				11	2,320	+27	584	1,700	104,000	105,030	211,000
Aug.				15	2,510	31	526	1,620	99,600	95,445	161,000
Sept.				14	2,490	+27	8.2	755	44,900	57,478	129,000
Oct.				1	8.2	+30	4.0	7.1	434	24,474	72,100
Nov.				+10	7.0	+1	4.0	6.4	381	23,437	158,000
Dec.				31	11.0	+1	7.0	8.5	522	23,416	87,300
Yearly					2,510		4.0	531	384,344	737,977	1,818,800
											212,333

* Partly estimated † And other days Ø Mean daily

RIO GRANDE BELOW CABALLO DAM, NEW MEXICO

DESCRIPTION: Water-stage recorder and cable with sit-down cable car equipped for winch and heavy weights, located .8 river mile below Caballo Dam, and 106.8 river miles above the American Dam at El Paso, Texas. The zero of the gage is 4,140.90 feet above mean sea level, U.S.C. & G.S. datum.

RECORDS: Based on 90 meter measurements during the year and a continuous record of gage heights. Records were furnished by the El Paso office of the United States Bureau of Reclamation. Records available: January 1938 through December 1957.

REMARKS: Reservoirs, diversions, and drainage returns modify the river flow at this station. In addition to the outflow from Caballo Dam listed below, 907 acre-feet of water were diverted in 1957 into Bonita Lateral, a small irrigation canal just below Caballo Dam. Prior to 1938, discharge records were kept at Percha Dam, a low diversion dam about 1.5 miles downstream from this station. Small accretions to the river take place between this station and Percha Dam.

EXTREME FLOWS FROM RECORDS:

Average Flow in Second-Feet

Daily:	Max. 7,650	May 20, 1942	Min. .1	Oct. 31-Nov. 14, 1954; Nov. 7-Dec. 31, 1955
Monthly:	Max. 6,710	May 1942	Min. .1	Nov. & Dec. 1955
Yearly:	Max. 2,480	1942	Min. 303	1955

Mean Daily Discharge in Second-Feet 1957 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.3	.3	.2	813	6.8	.3	1,070	1,780	649	1.7	.9	.5
2	.3	.3	.2	743	4.6	.3	1,080	1,820	847	1.7	.8	.6
3	.3	.4	.2	759	2.4	.3	1,270	1,940	1,050	1.6	.8	.6
4	.3	.4	.3	747	2.1	.2	1,570	1,940	1,070	1.6	.8	.6
5	.3	.4	.3	663	1.8	550	1,680	1,480	1,100	1.7	.8	.7
6	.3	.4	.3	575	1.5	1,380	1,760	823	1,140	1.7	.8	.7
7	.3	.3	.3	559	1.2	1,270	1,750	1,100	1,170	2.9	.8	.7
8	.3	.3	.3	556	1.2	1,380	1,740	1,490	1,180	4.0	.8	.6
9	.3	.3	.3	561	1.2	1,180	1,910	1,660	1,120	3.9	.8	.6
10	.3	.3	.2	701	1.2	1,280	2,170	1,880	1,360	3.6	.8	.6
11	.3	.3	.2	839	1.1	1,550	2,140	2,100	1,590	3.3	.7	.6
12	.3	.3	.2	912	1.0	1,770	2,140	2,020	1,680	3.0	.7	.6
13	.4	.3	.2	885	.9	1,920	1,930	2,070	1,910	2.7	.7	.6
14	.4	.3	.2	699	.9	1,870	1,680	2,440	2,250	2.5	.7	.6
15	.4	.3	.2	650	.9	1,780	1,590	2,380	2,270	2.3	.7	.6
16	.4	.3	.3	655	.8	1,790	1,500	2,350	2,290	2.1	.7	.6
17	.3	.4	.3	614	.8	1,770	1,650	2,540	2,210	1.9	.7	.6
18	.3	.6	.3	577	.7	1,890	1,900	2,360	2,140	1.7	.7	.6
19	.3	.6	.4	482	.7	1,830	1,830	2,000	1,870	1.5	.6	.6
20	.3	.5	567	223	.6	1,630	1,640	1,980	1,590	1.5	.6	.6
21	.3	.5	1,180	224	.6	1,360	1,660	2,130	1,380	1.4	.6	.6
22	.3	.4	1,180	266	.6	1,040	1,660	2,160	898	1.4	.6	.6
23	.3	.4	1,180	203	.6	1,030	1,640	1,860	18	1.5	.6	.6
24	.3	.3	1,180	176	.6	1,040	1,650	1,900	7.6	1.5	.6	.6
25	.3	.3	1,250	252	.5	972	587	1,890	3.0	1.6	.5	.6
26	.3	.2	1,300	289	.5	954	15.0	1,490	2.5	1.5	.5	.6
27	.3	.2	1,100	335	.5	955	362	1,720	2.0	1.4	.5	.6
28	.3	.2	873	338	.4	1,080	835	1,860	1.9	1.3	.5	.6
29	.3		903	337	.4	1,180	1,010	2,010	1.8	1.2	.5	.6
30	.3		926	140	.4	1,170	1,100	1,690	1.7	1.1	.5	.6
31	.3		894		.4		1,520	405		1.0		.6
Sum	9.8		15,773		37.9	35,622.1		57,268		61.8		18.8
	9.7		12,537.9		46,039.0		46,039.0		32,802.5		20.3	

Current Year 1957

Month	Extreme Gage Feet			Average Second-Feet		Total Acre-Feet	Period 1938-1957			
	Extreme Second-Feet		Average Second-Feet	Acre-Feet						
	High	Low	Day	Day	Average		Maximum	Minimum		
Jan.			†13	.4	† 1	.3	19.2	808	4,850	
Feb.			†18	.6	†26	.2	19.4	12,357	64,300	
Mar.			26	1,300	† 1	.2	404	71,080	120,000	
Apr.			12	912	30	140	526	98,645	212,000	
May			1	6.8	†28	.4	1.2	75.2	88,952	
June			13	1,920	4	.2	1,190	70,700	111,354	
July			10	2,170	26	15.0	1,490	91,300	116,340	
Aug.			17	2,540	31	405	1,850	114,000	134,000	
Sept.			16	2,290	30	1.7	1,090	65,100	57,572	
Oct.			8	4.0	31	1.0	2.0	123	8,300	
Nov.			1	.9	†25	.5	.7	40.3	35,400	
Dec.			† 5	.7	1	.5	.6	37.3	4,421	
Yearly				2,540		.2	549	397,614.4	688,660	
									1,795,670	
									219,127	

† And other days β Mean daily

RIO GRANDE AT EL PASO, TEXAS

DESCRIPTION: Water-stage recorder and cable with sit-down cable car equipped for winch and heavy weights. The recorder is located 5 miles northwest of El Paso, Texas, 6 miles northwest of Juarez, Chihuahua, and 1.9 river miles above the American Dam. The cable and staff gage are located 1 mile downstream from the recorder in the pass opposite site Courchesne Quarry. The zeros of the gages at the recorder and at the cable are 3,722.30 feet and 3,720.51 feet, respectively, above mean sea level, U.S.C. & G.S. datum.

RECORDS: Mean daily discharges in 1957 were computed by taking the sum of the flows in the American Canal and the flows at the river station below American Dam. Extreme discharges are those passing the El Paso station. Records available: 1889 through December 1957.

REMARKS: Reservoirs, diversions, and drainage returns modify the river flow at this station.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 24,000 second-feet on June 12, 1905, with a gage height of 6.0 feet at the lower gage. Min. occasionally no flow. Since Elephant Butte Dam was closed in 1915, the largest peak flow to pass this station was 13,500 second-feet on September 3, 1925.

Average Flow in Second-Feet

Daily:	Max. 23,680	June 12, 1905	Min. 0	Occasionally
Monthly:	Max. 14,300	June 1905	Min. 0	Occasionally
Yearly:	Max. 2,780	1905	Min. 70.1	1902

Mean Daily Discharge in Second-Feet 1957 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	4.6	2.9	1.9	145	75.2	2.6	324	671	1,170	24.8	11.8	7.3
2	4.1	2.8	1.8	116	70.4	2.4	349	392	598	19.8	11.3	7.3
3	2.7	3.2	1.9	138	18.7	2.4	335	581	552	20.1	11.4	8.0
4	2.7	3.2	1.8	94.9	3.7	2.5	347	576	456	16.5	10.6	7.6
5	2.6	3.5	1.4	97.4	3.7	2.5	350	677	532	17.2	11.3	7.7
6	2.7	2.7	1.7	117	3.5	2.5	355	703	540	27.4	11.5	7.7
7	2.3	1.9	1.9	111	6.1	2.3	405	524	461	17.8	11.9	7.6
8	2.5	1.7	2.2	113	5.4	2.2	444	554	492	13.7	11.8	7.7
9	3.2	1.4	2.5	80.3	5.3	57.1	407	353	467	12.5	12.2	7.4
10	4.4	2.2	2.7	56.0	5.3	246	420	500	423	12.5	12.0	7.5
11	4.4	1.6	3.0	54.8	5.0	254	468	505	313	17.2	11.9	7.4
12	4.1	1.2	2.1	55.9	5.3	244	752	643	311	18.9	11.5	7.2
13	4.6	1.3	1.0	109	4.8	244	844	693	433	177	10.0	7.0
14	4.5	1.5	.5	203	4.7	251	892	673	410	205	8.1	7.0
15	3.9	1.4	.1	285	4.0	399	854	707	619	86.7	7.2	6.5
16	3.9	1.5	.1	247	4.1	473	628	955	810	48.4	6.5	6.2
17	4.5	2.4	1.0	237	4.3	425	491	779	676	25.5	8.5	5.9
18	4.7	3.5	.5	218	4.5	429	465	866	641	15.5	8.1	6.2
19	3.7	5.3	2.3	207	4.2	483	447	1,740	605	13.9	8.3	6.2
20	4.1	2.9	1.0	244	4.0	639	657	737	622	14.5	7.6	6.5
21	4.0	2.2	1.5	232	4.3	677	732	712	528	151	8.2	7.1
22	3.9	1.1	2.5	151	3.3	587	608	803	446	51.5	8.3	7.1
23	4.0	2.9	2.5	21.2	3.0	542	631	773	515	60.0	7.8	7.0
24	3.3	4.0	2.5	10.9	2.7	370	605	886	622	38.5	7.7	7.1
25	2.9	3.7	87.1	7.5	2.3	203	907	728	312	18.3	7.3	7.1
26	2.9	1.0	185	5.8	2.8	208	2,970	682	174	13.5	7.0	7.4
27	2.9	3.1	144	5.1	2.9	168	575	784	90.5	11.4	7.1	7.3
28	2.9	2.3	138	5.5	2.4	136	469	389	66.1	11.0	6.9	7.3
29	2.8		121	5.7	2.5	134	309	476	51.7	11.5	7.3	7.5
30	3.5		82.3	64.8	2.4	147	270	862	28.1	11.9	7.9	7.5
31	3.4		103				329	3,020		11.8		7.6
Sum			68.4	3,438.8	7,335.5		23,944	1,195.3		221.9		
110.7			900.8	273.2	18,639		13,964.4	279.0				

Current Year 1957 Period 1924-1957

Month	Extreme Gage Feet			Extreme Second-Feet		Average Second-Feet	Total	Acre-Feet			
	High		Low	Day	Day			Acre-Feet	Average	Maximum	
	High	Low	Day	Day	Day	Day					
Jan.	1.98	1.78	17	6.8	8	0	3.6	220	9,399	17,500	
Feb.			19	6.6	26	.5	2.4	136	15,298	52,200	
Mar.	2.96		26	196	114	0	29.1	1,790	34,594	62,500	
Apr.	3.20	2.01	15	476	28	4.9	115	6,820	56,851	139,000	
May	2.50	1.86	1	93.7	25	2.3	8.8	542	63,095	357,000	
June	4.14	1.89	21	727	8	2.2	245	14,500	65,705	304,000	
July	7.10	2.87	26	4,730	30	246	601	37,000	72,807	198,000	
Aug.	6.81	3.00	31	5,780	2	302	772	47,500	75,104	158,000	
Sept.	5.25	2.74	1	3,120	30	23.8	465	27,700	54,653	171,000	
Oct.	3.18		13	281	127	9.6	38.6	2,370	21,696	57,900	
Nov.			12	15.5	16	3.8	9.3	553	14,180	151	
Dec.			6	8.7	19	4.3	7.2	440	13,321	27,700	
Yearly	7.10			5,780		0	193	139,571	496,703	1,559,200	57,481

" Estimated ↑ And other days

RIO GRANDE BELOW AMERICAN DAM

DESCRIPTION: Water-stage recorder and cable with sit-down cable car equipped for winch and heavy weights, located 3,200 feet below the American Dam and 1.5 miles above the International Dam, west of El Paso, Texas. The American Dam is 1,248.2 river miles above the Gulf of Mexico. The zero of the gage is 3,712.30 feet above mean sea level, U.S.C. & G.S. datum.

RECORDS: Based on 60 meter measurements and frequent estimates by hydrographer at extreme low flows during the year and a continuous record of gage heights. Computations by shifting channel methods. Records available: June 1938 through December 1957.

REMARKS: Reservoirs, diversions, and drainage returns modify the river flow at this station. The operation of the American Dam began June 2, 1938. At this dam, part of the flow passing the El Paso gaging station is diverted into the American Canal (see records of "Diversions from the Rio Grande") and the remainder, including excess flood flows, passes this station.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 6,770 second-feet on May 18, 1942, with a gage height of 9.77 feet. Min. no flow occurred on March 23, 1955 and for several days in 1956.

Average Flow in Second-Feet

Daily:	Max. 6,040	May 20, 1942	Min. 0	Several days 1956
Monthly:	Max. 4,880	May 1942	Min. .3	Oct. 1957
Yearly:	Max. 1,510	1942	Min. 13.8	1956

Mean Daily Discharge in Second-Feet 1957 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	4.6	2.9	1.9	1.6	.9	.6	1.3	90.6	534	.2	.3	7.3
2	4.1	2.8	1.8	1.7	.7	.4	1.3	2.5	184	.2	.3	7.3
3	2.7	3.2	1.9	1.5	.5	.4	1.3	2.1	184	.2	.4	8.0
4	2.7	3.2	1.8	1.1	.7	.5	1.0	2.5	181	.2	.4	7.6
5	2.6	3.5	1.4	1.2	.7	.5	.9	116	183	.2	.3	7.7
6	2.7	2.7	1.7	1.2	.5	.5	.7	138	182	.2	.2	7.7
7	2.3	1.9	1.9	.9	.6	.3	.7	132	186	.2	.2	7.6
8	2.5	1.7	2.2	1.4	.4	.2	.9	133	183	.2	.2	7.7
9	3.2	1.4	2.5	1.2	.3	.3	1.3	141	184	.2	.4	7.4
10	4.4	2.2	2.7	1.0	.3	.3	2.0	133	185	.2	.3	7.5
11	4.4	1.6	3.0	.8	.3	.4	3.5	116	180	.2	.2	7.4
12	4.1	1.2	2.1	1.6	.3	.4	137	116	182	.2	.2	7.2
13	4.6	1.3	1.0	2.1	.3	.5	150	118	180	.2	.2	7.0
14	4.5	1.5	.5	2.1	.5	.9	151	118	178	.2	.1	7.0
15	3.9	1.4	.1	137	.4	127	152	119	143	.2	.1	6.5
16	3.9	1.5	.1	153	.3	149	156	119	4.5	.2	.1	6.2
17	4.5	2.4	1.0	147	.4	149	159	116	1.0	.3	.1	5.9
18	4.7	3.5	.5	156	.3	147	175	134	1.0	.5	.1	6.2
19	3.7	5.3	2.3	157	.2	153	185	727	.9	.4	.2	6.2
20	4.1	2.9	1.0	154	.2	155	184	224	.8	.5	4.3	6.5
21	4.0	2.2	.5	153	.2	155	181	173	.8	.6	8.2	7.1
22	3.9	1.1	.5	53.8	.3	154	180	173	.7	.3	8.3	7.1
23	4.0	2.9	.5	* 1.4	.5	155	184	179	.6	.3	7.8	7.0
24	3.3	4.0	.5	1.1	.2	63.3	182	181	.5	.3	7.7	7.1
25	2.9	3.7	1.0	1.0	.3	2.3	271	179	.5	.5	7.3	7.1
26	2.9	1.0	1.0	1.0	.3	1.4	1,960	180	.4	.5	7.0	7.4
27	2.9	3.1	1.0	1.0	.4	1.1	214	177	.4	.3	7.1	7.3
28	2.9	2.3	.5	.9	.4	.6	175	176	.3	.3	6.9	7.3
29	2.8		.8	.9	.5	2.8	125	178	.3	.4	7.3	7.5
30	3.5		1.9	1.0	.4	2.0	* 2.7	323	.2	.4	7.9	7.5
31	3.4		1.7		.4		3.0	2,220		.3		7.6
Sum	110.7	68.4	* 41.3	1,138.5	12.7	1,423.7	4,941.6	6,936.7	9.1	3,061.9	84.1	221.9

Current Year 1957

Month	Extreme Gage Feet			Extreme Second-Feet		Average Second-Feet	Total Acre-Feet	Period June 1938-1957				
	High		Low	High				Acre-Feet				
	High	Low		Day	Day			Average	Maximum	Minimum		
Jan.	4.90	4.26	17	6.8	8	0	3.6	220	6,636	12,000		
Feb.	4.90	4.26	19	6.6	26	.5	2.4	136	3,944	32,800		
Mar.			11	* 0	3.0	* 14	0	* 1.3	2,650	17,500 *		
Apr.	5.28	3.80	15	180	29	.7	38.0	2,260	10,074	74,500		
May	3.86	3.72	5	1.4	15	.1	.4	25.2	24,982	300,000		
June	5.14	3.75	15	163	† 7	.1	47.5	2,820	21,523	250,000		
July	10.48	3.87	26	3,700	† 6	.7	159	9,800	18,179	155,000		
Aug.	10.95	3.90	31	4,610	† 2	2.0	224	13,800	16,108	114,000		
Sept.	9.12		1	2,280	30	.2	102	6,070	14,981	124,000		
Oct.			21	0	.6	1	0	.2	2,992	19,000		
Nov.	4.82	22		9.3	* 14	.1	2.8	167	2,160	8,700		
Dec.	4.74	4.46	6	8.7	19	4.3	7.2	440	1,408	7,760		
Yearly	10.95			4,610		0	49.5	35,838.1	125,637	1,093,553	10,001.1	

* Estimated * Partly estimated † And other days 0 Mean daily

RIO GRANDE AT ISLAND STATION

DESCRIPTION: Water-stage recorder and cable with sit-down cable car equipped for winch and heavy weights, located near Clint, Texas and San Agustin, Chihuahua. This station is on the rectified channel of the Rio Grande, 27.1 river miles below the American Dam at El Paso, Texas. The zero of the gage is 3,608.99 feet above mean sea level, U.S.C. & G.S. datum.

RECORDS: Based on 8 meter measurements during the year and a continuous record of gage heights. Computations by shifting channel methods. Records available: August 17, 1938 through December 1957.

REMARKS: Reservoirs, diversions, and drainage returns modify the river flow at this station.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 6,490 second-feet on May 19, 1942, with a gage height of 16.06 feet. Min. frequently no flow.

Average Flow in Second-Feet

Daily:	Max. 6,140	May 19, 1942	Min. 0	Frequently
Monthly:	Max. 4,880	May 1942	Min. 0	Frequently
Yearly:	Max. 1,490	1942	Min. * .3	1956

Mean Daily Discharge in Second-Feet 1957 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0	0	0	0	0	0	0	* 2.0	512	0	0	0
2	0	0	0	0	0	0	0	* 5.0	* 1.5	0	0	0
3	0	0	0	0	0	0	0	* 4.0	* 1.0	0	0	0
4	0	0	0	0	0	0	0	* 3.0	1.0	0	0	0
5	0	0	0	0	0	0	0	* 3.0	* 1.0	0	0	0
6	0	0	0	0	0	0	0	* 4.0	* 1.0	0	0	0
7	0	0	0	0	0	0	0	* 5.0	* 1.0	0	0	0
8	0	0	0	0	0	0	0	* 5.3	* 1.0	0	0	0
9	0	0	0	0	0	0	0	* 5.4	* 1.0	0	0	0
10	0	0	0	0	0	0	0	* 5.5	* 1.0	0	0	0
11	0	0	0	0	0	0	0	* 5.6	1.0	0	0	0
12	0	0	0	0	0	0	0	* 5.7	* 1.0	0	0	0
13	0	0	0	0	0	0	0	* 5.8	* 1.0	0	0	0
14	0	0	0	0	0	0	*	2.0	5.8	* 1.0	0	0
15	0	0	0	0	0	0	*	2.4	* 5.8	* 1.0	0	0
16	0	0	0	0	0	0	*	2.4	* 5.8	* 1.0	0	0
17	0	0	0	0	0	0	*	3.5	* 5.8	* 1.0	0	0
18	0	0	0	0	0	0	*	2.4	* 5.8	* 1.0	0	0
19	0	0	0	0	0	0	*	2.4	73.1	* 1.0	0	0
20	0	0	0	0	0	0	*	2.4	353	* 1.0	0	0
21	0	0	0	0	0	0	*	2.4	0	* 1.0	0	0
22	0	0	0	0	0	0	*	2.5	0	* 1.0	0	0
23	0	0	0	0	0	0	*	2.5	0	* 1.0	0	0
24	0	0	0	0	0	0	*	2.5	0	* 1.0	0	0
25	0	0	0	0	0	0	*	2.5	0	* 1.0	0	0
26	0	0	0	0	0	0	448	0	* 1.0	0	0	0
27	0	0	0	0	0	0	786	1.0	* 1.0	0	0	0
28	0	0	0	0	0	0	*	2.0	1.0	* 1.0	0	0
29	0	0	0	0	0	0	*	1.8	1.0	* .5	0	0
30	0	0	0	0	0	0	*	1.5	1.0	0	0	0
31	0	0	0	0	0	0	*	.9	939	0	0	0
Sum	0	0	0	0	0	0		1,457.4	540.0	0	0	0

Current Year 1957

Month	Extreme Gage Feet			Extreme Second-Feet			Average Second-Feet	Total Acre-Feet	Acre-Feet		
				High		Low			Average	Maximum	Minimum
	High	Low	Day	Day	Day	Day			High	Maximum	Minimum
Jan.				0		0	0	0	6,415	11,900	0
Feb.				0		0	0	0	4,914	37,000	0
Mar.				0		0	0	0	3,311	21,000	0
Apr.				0		0	0	0	6,049	70,500	0
May				0		0	0	0	17,883	299,800	0
June				0		0	0	0	15,115	241,000	0
July	13.47		27	2,860	† 1	0	41.0	2,520	11,862	* 118,500	0
Aug.	13.50		31	2,900	† 21	0	47.0	2,890	10,852	99,400	0
Sept.	11.83		1	1,140	30	0	18.0	1,070	12,597	* 119,200	0
Oct.				0		0	0	0	5,669	42,800	0
Nov.				0		0	0	0	1,343	7,270	0
Dec.				0		0	0	0	2,604	12,900	0
Yearly	13.50			2,900		0	9.0	6,480	98,614	1,079,340	* 238.1

[‡] Estimated * Partly estimated † And other days

RIO GRANDE AT COUNTY LINE STATION

DESCRIPTION: Water-stage recorder and cable with sit-down cable car equipped for winch and heavy weights, located .8 mile downstream from the El Paso-Hudspeth county line. This station is on the rectified channel of the Rio Grande, 47.3 river miles below the American Dam at El Paso, Texas. The zero of the gage is 3,547.59 feet above mean sea level, U.S.C. & G.S. datum.

RECORDS: Based on frequent inspections of the station during the year and a continuous record of gage heights. Records available: January 1938 through December 1957.

REMARKS: Reservoirs, diversions, and drainage returns modify the river flow at this station.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 6,340 second-feet on May 19, 1942, with a gage height of 8.66 feet. Min. frequently no flow.

Average Flow in Second-Feet

Daily:	Max. 6,180	May 18, 1942	Min. 0	Frequently
Monthly:	Max. 4,920	May 1942	Min. 0	Frequently
Yearly:	Max. 1,720	1942	Min. 0	1956

Mean Daily Discharge in Second-Feet 1957 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0	0	0	0	0	0	0	0	1,010	0	0	0
2	0	0	0	0	0	0	0	0	87.8	0	0	0
3	0	0	0	0	0	0	0	0	6.1	0	0	0
4	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0	0	0
12	0	0	0	0	0	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0
15	0	0	0	0	0	0	0	0	0	0	0	0
16	0	0	0	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0	0	0
18	0	0	0	0	0	0	0	0	0	0	0	0
19	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0	0
21	0	0	0	0	0	0	0	0	0	0	0	0
22	0	0	0	0	0	0	0	0	0	0	0	0
23	0	0	0	0	0	0	0	0	0	0	0	0
24	0	0	0	0	0	0	0	0	0	0	0	0
25	0	0	0	0	0	0	0	0	0	0	0	0
26	0	0	0	0	0	0	0	0	0	0	0	0
27	0	0	0	0	0	0	407	0	0	0	0	0
28	0	0	0	0	0	0	4.9	0	0	0	0	0
29	0	0	0	0	0	0	0	0	0	0	0	0
30	0	0	0	0	0	0	0	0	0	0	0	0
31	0	0	0	0	0	0	0	121	0	0	0	0
Sum	0	0	0	0	0	0	411.9	121	1,103.9	0	0	0

Month	Current Year 1957			Period 1938-1957					
	Extreme Second-Feet			Average Second-Feet	Total Acre-Feet	Acre-Feet			
	High	Low	Day			Day	Low	Average	Maximum
Jan.				0	0	0	0	9,899	20,000
Feb.				0	0	0	0	8,550	47,900
Mar.				0	0	0	0	7,496	38,900
Apr.				0	0	0	0	11,342	84,200
May				0	0	0	0	21,861	303,000
June				0	0	0	0	19,312	239,000
July	5.37		27	1,130	13.3	817	17,757	140,000	0
Aug.	5.43		31	1,200	3.9	240	16,934	123,000	0
Sept.	5.51		1	1,300	36.8	2,190	19,451	140,000	0
Oct.				0	0	0	12,897	61,400	0
Nov.				0	0	0	8,713	20,400	0
Dec.				0	0	0	9,600	29,700	0
Yearly	5.51			1,300	4.5	3,247	163,822	1,247,500	0

† And other days

RIO GRANDE AT FORT QUITMAN, TEXAS

DESCRIPTION: Water-stage recorder and cable with sit-down cable car equipped for winch and heavy weights, located on the rectified channel of the Rio Grande, 1.5 miles below Old Fort Quitman and 81.1 river miles below the American Dam at El Paso, Texas. The zero of the gage is 3,450.57 feet above mean sea level, U.S.C. & G.S. datum.

RECORDS: Based on frequent estimates during low flow, 1 meter measurement during the year, and a continuous record of gage heights. Computations by shifting channel methods. Records available: January 1889 through December 1957.

REMARKS: Reservoirs, diversions, and drainage returns modify the river flow at this station.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 10,600 second-feet on October 5, 1946, with a gage height of 10.00 feet. Min. frequently no flow.

Average Flow in Second-Feet ‡

Daily:	Max. 5,890	May 19, 1942	Min. 0	Frequently
Monthly:	Max. 5,030	May 1942	Min. 0	Several months 1952, 1955, & 1956
Yearly:	Max. 1,750	1942	Min. 6.7	1957

Mean Daily Discharge in Second-Feet 1957 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0	0	0	0	0	0	0	0	273	0	0	0
2	0	0	0	0	0	0	0	15.7	139	0	0	0
3	0	0	0	0	0	0	0	4.0	36.5	0	0	0
4	0	0	0	0	0	0	0	2.0	1.5	0	0	0
5	0	0	0	0	0	0	0	.2	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0	0	0
7	0	0	0	0	310	0	0	0	0	0	0	0
8	0	0	0	0	57.9	0	0	0	0	0	0	0
9	0	0	0	0	4.0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	56.8	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0	0	0
12	0	0	0	0	0	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0
15	0	0	0	0	0	0	0	0	0	0	0	0
16	0	0	0	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0	0	0
18	0	0	0	0	0	0	0	0	0	0	0	0
19	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0	0
21	0	0	0	0	0	0	0	16.2	0	98.5	0	0
22	0	0	0	0	0	0	0	.2	0	460	0	0
23	0	0	0	0	0	0	0	65.7	0	* 16.2	0	0
24	0	0	0	0	0	0	0	185	0	.5	0	0
25	0	0	0	0	0	0	0	16.5	0	.3	0	0
26	0	0	0	0	0	0	0	1.0	0	0	0	0
27	0	0	0	0	0	0	0	0	0	0	0	0
28	0	0	0	0	0	0	0	0	0	0	0	0
29	0	0	0	0	0	0	0	0	0	0	0	0
30	0	0	0	0	0	0	0	0	0	0	0	0
31	0	0	0	0	0	0	0	0	0	0	0	0
Sum	0	0	0	0	371.9	0	268.2	770.5	450.0	577.7	0	0

Current Year 1957

Month	Extreme Gage Feet			Extreme Second-Feet		Average Second-Feet	Total Acre-Feet	Acre-Feet			
	High	Low	Day	High	Low			Average	Maximum	Minimum	
					Day	Day					
Jan.				0	0	0	0	10,741	20,900	0	
Feb.				0	0	0	0	10,645	50,100	0	
Mar.				0	0	0	0	8,821	38,900	0	
Apr.				0	0	0	0	10,958	* 77,000	0	
May	6.71		7	1,750	† 1	0	12.0	738	19,911	309,000	0
June				0	0	0	0	0	18,107	240,000	0
July	6.22		23	1,320	† 1	0	8.7	532	18,924	140,000	235
Aug.	7.24		30	2,300	† 1	0	24.9	1,530	23,428	* 127,000	185
Sept.	5.42		1	772	† 5	0	15.0	893	26,195	147,000	0
Oct.	5.84		22	1,040	† 1	0	18.6	1,150	19,470	66,500	51.6
Nov.				0	0	0	0	0	12,446	24,500	0
Dec.				0	0	0	0	0	12,885	31,000	0
Yearly	7.24			2,300		0	6.7	4,843	192,531	1,270,400	4,843

^u Estimated * Partly estimated † And other days ‡ Period 1924-1957

RIO GRANDE AT UPPER PRESIDIO STATION

DESCRIPTION: Water-stage recorder and cable with sit-down cable car equipped for winch and heavy weights, located 7.8 river miles above the confluence of the Río Conchos, about 10 miles northwest of Presidio, Texas and Ojinaga, Chihuahua, and 285.7 river miles below the American Dam at El Paso, Texas. The zero of the gage is 2,576.66 feet above mean sea level, U.S.C. & G.S. datum.

RECORDS: Based on 13 meter measurements during the year and a continuous record of gage heights. Computations by shifting channel methods. Records available: January 1889 through December 1957.

REMARKS: Reservoirs, diversions, and drainage returns modify the river flow at this station.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 14,000 second-feet on June 14, 1905. A gage height of 10.57 feet was recorded on May 26, 1942, with a flow of 5,160 second-feet. This level was the highest reached during the years 1923-1957, inclusive. Min. frequently no flow.

Average Flow in Second-Feet ‡

Daily:	Max. 13,700	June 13 & 14, 1905	Min. 0	Frequently
Monthly:	Max. 10,150	June 1905	Min. 0	Frequently
Yearly:	Max. 1,970	1907	Min. 3.5	1956

Mean Daily Discharge in Second-Feet 1957 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0	0	0	0	0	70.9	0	0	0	0	0	0
2	0	0	0	0	0	8.1	0	0	4.4	0	0	0
3	0	0	0	0	0	.8	0	0	117	0	0	0
4	0	0	0	0	0	.1	0	0	186	0	0	0
5	0	0	0	0	0	0	0	0	40.5	0	0	0
6	0	0	0	0	0	0	0	0	* .8	0	0	0
7	0	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	184	0	0	0	0	0	0	0
9	0	0	0	0	7.0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0	0	0
12	0	0	0	0	0	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	.7	0	0	0	0
15	0	0	0	0	0	0	0	0	0	0	0	0
16	0	0	0	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0	0	0
18	0	0	0	0	0	498	0	0	0	0	0	0
19	0	0	0	0	0	171	0	7.6	0	0	0	0
20	0	0	0	0	0	* 44.6	0	0	0	3.7	0	0
21	0	0	0	0	0	* .6	0	0	0	172	0	0
22	0	0	0	0	0	0	0	0	0	54.4	0	0
23	0	0	0	0	0	0	26.4	0	0	260	0	0
24	0	0	0	0	0	0	27.9	0	0	280	0	0
25	0	0	0	0	0	0	.1	5.3	0	304	0	0
26	0	0	0	0	.1	0	0	1.2	0	130	0	0
27	0	0	0	0	0	0	0	0	0	37.1	0	0
28	0	0	0	0	40.1	0	0	0	0	3.9	0	0
29	0	0	0	76.4	29.5	0	0	0	0	2.0	0	0
30	0	0	0	17.3	279	0	0	0	0	* 1.1	0	0
31	0	0	0	0	26.5	0	0	0	0	.4	0	0
Sum		0	0	93.7	566.2	794.1	54.4	14.8	348.7	1,248.6	0	0

Current Year 1957							Period 1924-1957		
Month	Extreme Gage Feet		Extreme Second-Feet		Average Second-Feet	Total Acre-Feet	Acre-Feet		
	High	Low	Day	Day			Average	Maximum	Minimum
Jan.				0	0	0	10,012	24,400	0
Feb.				0	0	0	9,271	40,800	0
Mar.				0	0	0	7,347	39,100	0
Apr.	7.45		29	270	† 1	0	3.1	186	6,051
May	8.50		30	387	† 1	0	18.3	1,120	14,522
June	11.30		18	632	† 5	0	26.5	1,580	14,302
July	8.47		26	324	† 1	0	1.8	108	19,756
Aug.	5.18		19	34.5	† 1	0	.5	29.4	25,690
Sept.	7.70		4	202	† 1	0	11.6	692	28,639
Oct.	9.44		25	315	† 1	0	40.3	2,480	24,753
Nov.				0		0	0	0	11,660
Dec.				0		0	0	0	11,326
Yearly	11.30			632	0	8.6	6,195.4	183,329	1,176,700
									2,514.4

^a Estimated * Partly estimated † And other days ^b Period June 1900, March 1914, September 1919, March 1920, and 1924-1957.

RIO CONCHOS NEAR OJINAGA, CHIHUAHUA

DESCRIPTION: Water-stage recorder and cable with stand-up cable car and winch, located 1.9 miles west of Ojinaga, Chihuahua, 3.7 miles west of Presidio, Texas, and 1.5 miles upstream from the confluence with the Rio Grande. The Rio Conchos enters the Rio Grande 13.8 miles above the Lower Presidio gaging station on the Rio Grande, 7.8 miles below the Upper Presidio gaging station on the Rio Grande, and 293.5 river miles below the American Dam at El Paso, Texas. The zero of the gage is 2,569.48 feet above mean sea level, U.S.C. & G.S. datum.

RECORDS: Based on 202 meter measurements during the year, 182 by the Mexican and 20 by the United States Section of this Commission, and a continuous record of gage heights. Computations by shifting channel methods. Records available: January 1896 through December 1957.

REMARKS: Reservoirs, diversions, and drainage returns modify the river flow at this station. La Boquilla Reservoir with 2,417,500 acre-feet capacity, La Colina Reservoir with 19,500 acre-feet capacity, and La Rosettilla Reservoir with 15,400 acre-feet capacity are located 250, 242, and 186 river miles, respectively, above this station. Francisco I. Madero Reservoir, with capacity of 344,600 acre-feet, is located on the Rio San Pedro, a tributary which enters the Rio Conchos 174 river miles above this station. Power generation facilities at La Boquilla, 14,647 kw; at La Colina, 3,620 kw.; at La Rosettilla, 5,150 kw.; at Francisco I. Madero, none.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 162,000 second-feet on September 11, 1904. Min. no flow several days in May, June, and July 1953 and in July 1955.

Average Flow in Second-Feet †

Daily:	Max. 148,900	Sept. 11, 1904	Min. 0	Several days 1953 & 1955
Monthly:	Max. 24,540	Sept. 1904	Min. 4.7	Apr. 1955
Yearly:	Max. 3,710	1906	Min. 155	1953

Mean Daily Discharge in Second-Feet 1957 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	334	227	388	60.4	360	161	27.5	214	304	172	459	477
2	378	257	335	52.6	251	154	22.6	175	290	154	449	480
3	284	297	287	35.3	168	157	53.7	228	267	164	459	456
4	306	278	286	21.5	189	158	61.1	237	533	158	442	420
5	273	224	239	17.7	209	158	30.0	1,040	470	156	396	360
6	250	221	243	14.8	300	146	20.8	1,080	431	156	374	442
7	319	248	226	12.4	291	144	17.3	713	480	170	360	427
8	346	273	218	11.7	2,230	141	16.2	791	473	738	348	381
9	392	245	240	9.9	675	136	19.8	897	470	3,440	353	332
10	290	207	306	8.5	629	124	19.4	724	427	1,740	348	320
11	254	456	310	7.8	590	101	44.8	650	388	1,710	343	349
12	303	420	253	9.2	572	79.5	19.4	692	271	724	367	328
13	298	338	346	11.7	523	103	14.5	975	253	632	371	311
14	346	245	259	15.9	579	99.9	13.1	1,210	261	519	345	381
15	332	281	260	13.8	590	70.6	18.4	1,370	250	459	328	381
16	339	367	251	13.4	424	50.9	23.0	915	275	413	323	326
17	292	473	257	21.2	351	86.9	45.9	1,150	301	336	349	349
18	287	784	250	25.8	339	6,360	56.1	929	322	396	357	311
19	371	625	295	25.4	381	431	156	862	230	466	335	288
20	385	434	189	29.3	417	197	68.2	2,420	182	5,610	360	296
21	466	337	155	86.9	337	158	139	1,090	196	7,340	333	346
22	441	406	130	113	325	147	420	636	339	4,910	378	334
23	378	526	100	84.8	321	142	244	487	417	1,550	381	292
24	357	530	85.5	62.5	378	614	893	727	459	1,000	351	310
25	420	643	85.1	47.0	343	186	1,730	392	371	735	389	298
26	325	512	102	56.5	296	115	985	335	280	611	434	281
27	287	410	86.2	43.1	280	121	413	332	240	597	388	263
28	263	396	58.3	234	274	86.2	357	254	233	576	367	256
29	247		58.3	1,720	229	63.9	302	217	209	544	452	252
30	232		58.3	685	516	44.1	260	315	196	565	448	260
31	253			57.6	337		268	238		509		253
Sum	10,660	3,551.1	13,704	10,736.0	6,758.8	22,295		9,818	37,250	11,387		10,560
	10,048	6,414.3										

Current Year 1957

Period 1924-1957

Month	Extreme Gage Feet			Extreme Second-Feet		Average Second-Feet	Total Acre-Feet	Acre-Feet		
	High	Low	Day	High	Low			Average	Maximum	Minimum
Jan.	4.92	4.26	21	537	30	221	19,930	50,592	147,000	11,500
Feb.	5.68	4.20	18	978	10	196	381	21,140	87,700	10,600
Mar.	4.89	3.61	† 1	512	†28	53.0	207	12,720	39,352	80,800
Apr.	10.37	3.18	29	4,700	†10	7.4	118	7,040	26,036	281
May	10.10	3.94	8	4,520	3	141	442	27,180	31,989	148,000
June	15.55	3.48	18	13,350	17	34.6	358	21,290	37,440	91,900
July	8.56	3.15	25	3,320	14	12.7	218	13,410	83,103	502,000
Aug.	9.02	4.00	20	3,740	2	147	719	44,220	114,419	8,890
Sept.	5.25	4.07	4	699	†20	167	327	19,470	216,777	6,770
Oct.	15.94	4.04	21	14,370	2	144	1,200	73,890	137,902	798,000
Nov.	5.12	4.66	25	501	†15	317	380	22,590	53,506	110,000
Dec.	5.15	4.43	† 1	519	†28	244	341	20,950	46,304	97,700
Yearly	15.55	3.15		14,370		7.4	420	303,830	882,031	2,431,850
										111,885

† And other days † Period June 1900-March 1914; September 1919-March 1920; and 1924-1957

ALAMITO CREEK NEAR PRESIDIO, TEXAS

DESCRIPTION: Water-stage recorder about 1,800 feet above the confluence with the Rio Grande. Measurements of high flows are made from the highway bridge, 200 feet downstream from the recorder. This creek enters the Rio Grande near the lower end of Presidio Valley, 9.7 river miles below the international highway bridge between Presidio, Texas and Ojinaga, Chihuahua, and 306.9 river miles below the American Dam at El Paso, Texas. The zero of the gage is 2,541.61 feet above mean sea level, U.S.C. & G.S. datum.

RECORDS: Based on 84 meter measurements made during the year, of low and medium flows, a high flow rating curve determined by slope-area calculations, and a continuous record of gage heights. Computations by shifting channel methods. Records available: January 1932 through December 1957.

REMARKS: A small irrigation reservoir (San Esteban), 10.5 miles south of Marfa, Texas, and irrigation diversions below the reservoir modify the flow of this spring-fed creek. On October 2, 1932, backwater from the Rio Grande reached a gage height of 8.33 feet at this station. This is the highest recorded gage height.

EXTREME FLOWS FROM RECORDS: Momentary: Max. *16,400 second-feet on September 24, 1955, with a gage height of 7.33 feet. Min. Ø .1 second-foot on July 25, 1953.

Average Flow in Second-Feet

Daily:	Max. 3,290	Oct. 24, 1941	Min. .1	July 25, 1953
Monthly:	Max. 329	Sept. 1936	Min. .6	Oct., Nov., & Dec. 1953
Yearly:	Max. 55.9	1941	Min. Ø 4.3	1951

Mean Daily Discharge in Second-Feet 1957 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.8	1.0	1.6	.7	.4	428	.2	64.6	.4	.8	1.3	1.8
2	.8	1.0	1.7	.8	.4	1.6	.2	138	.4	.8	1.4	1.8
3	.8	1.0	1.9	.8	.4	1.0	.3	* 27.0	.4	.8	1.5	1.8
4	.8	1.0	2.0	.9	.4	1.0	.3	* 8.0	.4	.8	1.5	1.9
5	.8	1.0	1.9	.9	.4	.9	.3	* 3.5	.4	.8	1.6	2.0
6	.9	1.0	1.8	.9	.4	.7	.4	1.1	.4	.8	1.7	2.1
7	.9	1.0	1.7	.9	4.1	.6	.4	1.1	.5	.9	1.6	2.0
8	.9	1.0	1.7	.9	77.1	.6	.4	1.1	.5	16.9	1.6	2.0
9	1.0	1.0	1.6	.9	19.6	.6	.4	1.1	.5	69.9	1.6	1.9
10	1.0	1.0	1.5	.9	.9	.5	.3	1.1	.5	1.5	1.6	1.8
11	1.0	1.0	1.4	.9	.9	.5	.3	1.1	.5	1.4	1.7	1.8
12	1.0	1.0	1.3	.9	.9	.5	.2	43.2	.5	1.3	1.7	1.7
13	1.1	1.0	1.1	.8	.9	.6	.2	27.3	.5	1.2	1.7	1.7
14	1.1	1.0	1.0	.8	.8	.6	.2	.9	.4	1.2	1.7	1.7
15	1.1	1.0	1.0	.8	.8	.6	.2	.9	.4	1.1	1.7	1.8
16	1.1	201	1.0	.8	.7	.5	.2	.9	.4	1.1	1.8	1.8
17	1.0	128	1.0	.7	.6	.5	.2	.9	.4	1.0	1.8	1.8
18	1.0	3.4	1.0	.7	.5	.4	.3	.9	.4	1.0	1.8	1.9
19	1.0	900	1.0	.8	.5	.4	67.1	.9	.3	1.1	1.9	1.9
20	1.0	288	1.0	.8	.4	.4	8.2	99.6	.3	1.8	1.8	2.0
21	1.0	30.0	1.0	.9	.4	.4	48.1	520	.3	93.9	1.6	2.0
22	1.0	2.0	1.0	1.0	.5	.4	453	40.8	1,290	47.3	1.5	1.9
23	1.0	1.1	1.0	.9	.6	.4	183	.8	37.5	5.7	1.6	1.9
24	1.0	1.1	1.1	.8	.6	2.2	128	.8	1.0	1.6	1.6	1.9
25	1.0	1.1	1.1	.7	.6	.3	5.0	.7	1.0	1.6	1.7	1.8
26	1.0	1.3	1.0	.7	.6	.3	.8	.6	1.0	1.6	1.8	1.8
27	1.0	1.4	.9	.7	284	.3	.7	.6	.9	1.6	1.8	1.8
28	1.0	1.5	.8	* 438	74.0	.3	.6	.6	.9	1.6	1.7	1.8
29	1.0	.8	16.5	3.5	.3	.5	.5	.5	.8	1.6	1.7	1.7
30	1.0	.8	.9	2.5	.4	.4	.4	.5	.8	1.6	1.7	1.7
31	1.0	.7		1.0			.4	.5	1.4			1.7
Sum	1,574.9	* 477.7	445.8	900.8	989.6	1,342.7	265.7	57.2				
	30.2	38.4	479.4	900.8	989.6	1,342.7	265.7	57.2				

Month	Extreme Gage Feet			Extreme Second-Feet			Average Second-Feet	Total Acre-Feet	Period 1932-1957				
	High		Low	High		Low			Average	Maximum	Minimum		
	High	Low		Day	Day								
Jan.				†13	Ø 1.1	Ø .8	1.0	59.9	170	* 273	46.4		
Feb.	6.15		19	5,000	† 1	Ø 1.0	56.2	3,120	273	3,120	41.5		
Mar.			4	Ø 2.0	31	Ø .7	1.2	76.2	* 173	270	46.4		
Apr.	6.20		28	* 5,400	† 1	Ø .7	* 15.9	* 948	* 284	* 1,070	57.9		
May	5.52		27	1,550	† 1	Ø .4	15.5	951	1,089	8,520	88.3		
June	5.61		1	1,900	†25	.3	14.9	884	* 1,757	* 6,360	50.8		
July	6.59		22	9,300	† 1	Ø .2	29.1	1,790	* 3,128	* 18,500	46.8		
Aug.	5.50		21	2,300	† 1	* .1	31.9	1,960	* 2,943	* 16,330	73.0		
Sept.	7.05		22	14,300	†19	Ø .3	44.8	2,660	* 3,064	* 19,600	128		
Oct.	4.60		9	285	† 1	.8	8.6	527	1,998	19,200	36.9		
Nov.			19	1.9	1	1.3	1.7	98.6	197	807	35.7		
Dec.			6	2.1	†12	1.7	1.8	113	182	408	39.3		
Yearly	7.05			14,300		.1	18.2	13,187.7	* 15,258	40,444	* 3,109.2		

^{*} Estimated * Partly estimated † And other days Ø Mean daily

RIO GRANDE AT LOWER PRESIDIO STATION

DESCRIPTION: Water-stage recorder and cable with stand-up cable car equipped for winch and heavy weights, located about 10.1 river miles below the international highway bridge between Presidio, Texas and Ojinaga, Chihuahua, .4 mile below the confluence of Alamito Creek with the Rio Grande, and 307.3 river miles below the American Dam at El Paso, Texas. The zero of the gage is 2,527.99 feet above mean sea level, U.S.C. & G.S. datum.

RECORDS: Based on 104 meter measurements during the year and a continuous record of gage heights. Computations by shifting channel methods. Records available: January 1955 through December 1957 at this location. Records, published under this same station name, are also available from January 1896 through June 13, 1932 for a station located about 12.1 miles (erroneously reported in Water Bulletin Number 1 as 7.5 miles) below the confluence of the Río Conchos and 1.3 miles above Alamito Creek, and from June 14, 1932 through December 31, 1954 for a station about 2.0 miles below the confluence of the Río Conchos and 11.4 miles above the confluence of Alamito Creek.

REMARKS: Reservoirs, diversions, and drainage returns modify the river flow at this station.

Mean Daily Discharge in Second-Feet 1957 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	408	248	543	57.9	590	644	28.0	298	289	204	632	500
2	453	253	390	47.3	285	269	12.8	394	245	175	601	520
3	376	327	335	49.5	198	203	9.5	193	268	175	597	512
4	354	315	333	34.8	181	184	26.0	199	624	178	549	453
5	351	259	286	20.2	192	228	28.0	605	504	179	494	382
6	298	247	251	13.2	254	183	14.0	1,370	454	184	372	422
7	355	283	258	15.7	311	* 146	8.4	801	471	198	361	526
8	376	284	215	22.6	2,740	139	5.2	782	500	771	356	424
9	446	294	253	17.6	1,020	134	1.0	917	517	4,370	365	358
10	363	244	325	14.2	675	120	1.1	767	473	1,910	361	318
11	287	327	336	7.2	708	97.9	4.0	648	433	2,330	356	342
12	319	527	283	5.0	682	58.2	4.7	695	297	1,290	365	359
13	346	409	340	4.9	615	52.6	.9	1,510	251	911	382	321
14	380	302	307	11.7	617	60.0	.7	1,130	262	789	397	381
15	380	292	265	17.8	673	53.4	1.1	2,260	273	530	349	432
16	382	413	264	9.8	476	43.7	1.1	967	304	450	338	362
17	366	474	266	14.1	359	35.8	1.4	1,100	314	458	354	345
18	325	701	282	29.4	318	* 5,390	16.0	1,080	311	411	366	329
19	412	1,790	308	32.7	349	1,390	90.8	819	248	514	353	297
20	429	785	228	28.7	408	401	112	2,820	192	* 3,140	344	289
21	493	445	155	42.8	337	192	91.7	1,920	185	* 6,310	354	340
22	536	454	149	100	286	143	855	826	1,680	* 4,860	376	357
23	461	631	120	78.9	291	128	771	531	459	* 2,670	409	318
24	372	708	111	56.2	349	571	806	798	544	* 1,520	366	304
25	479	799	111	43.5	332	383	1,510	490	459	1,320	318	358
26	379	697	111	34.6	345	98.5	1,760	386	331	1,090	468	299
27	342	548	95.0	36.9	552	71.0	456	372	253	849	370	280
28	305	393	72.0	332	427	66.9	386	285	238	737	326	265
29	266		63.0	2,060	282	38.0	311	210	239	653	428	259
30	245		62.0	844	707	80.2	257	223	230	694	473	258
31	261		65.0		483	233		201		635		264
Sum	13,449	11,545	4,083.2	7,182.0	16,042	* 11,604.2	25,597	11,848	* 40,505	12,140		11,174

Current Year 1957 Period 1955-1957

Month	Extreme Gage Feet			Extreme Second-Feet		Average Second-Feet	Total Acre-Feet	Acre-Feet		
	High	Low	Day	High	Low			Average	Maximum	Minimum
	High	Low	Day	Day	Low					
Jan.	4.20	3.31	22	586	†30	225	372	22,900	18,400	22,900
Feb.	6.68	3.27	19	3,170	11	211	480	26,700	19,567	26,700
Mar.	4.38	2.57	1	634	29	55.0	232	14,200	11,603	14,200
Apr.	8.08	1.92	29	4,650	12	4.3	136	8,100	3,827	8,100
May	8.52	3.39	8	5,070	4	167	517	31,800	13,049	31,800
June	* 10.50	2.34	18	* 7,090	17	18.5	* 387	* 23,000	* 11,823	23,000
July	8.10	2.47	22	4,660	14	.6	252	15,500	* 34,173	7,120
Aug.	8.87	3.97	20	3,730	31	140	826	50,800	* 81,100	163,000
Sept.	10.64	4.00	22	5,150	21	168	395	23,500	* 49,800	94,900
Oct.	* 11.40	4.33	21	* 7,370	† 4	164	* 1,310	* 80,300	* 82,100	142,000
Nov.	4.93	4.54	1	649	29	292	405	24,100	26,067	31,100
Dec.	4.98	4.36	2	589	29	247	360	22,200	21,967	22,200
Yearly	* 11.40	1.92		* 7,370		.6	474	* 343,100	373,476	* 571,538
										205,790

* Partly estimated † And other days

TERLINGUA CREEK NEAR TERLINGUA, TEXAS

DESCRIPTION: Bubbler-type water-stage recorder, operated with bottled nitrogen gas, and cable with stand-up cable car equipped for winch and heavy weights, located 2.7 miles above the confluence with the Rio Grande. This creek enters the Rio Grande at the lower end of Santa Helena Canyon, 371.6 river miles below the American Dam at El Paso, Texas. The zero of the gage is 2,200.64 feet above mean sea level, U.S.C. & G.S. datum.

RECORDS: Based on 75 meter measurements during the year and a continuous record of gage heights. Computations by shifting channel methods. Records available: January 1932 through December 1957.

REMARKS: Irrigation diversions modify the flow of this spring-fed creek at this station.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 34,900 second-feet on May 24, 1935, with a gage height of 17.59 feet on a gage .3 mile downstream. Min. no flow on September 29-30, 1937.

Average Flow in Second-Feet

Daily:	Max. 17,200	June 1, 1937	Min. " 0	Sept. 29-30, 1937
Monthly:	Max. 921	June 1937	Min. .8	Oct. 1934
Yearly:	Max. 146	1937	Min. 5.5	1943

Mean Daily Discharge in Second-Feet 1957 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	2.1	2.0	1.9	2.2	13.0	379	2.4	442	1.4	1.6	1.5	1.6
2	2.2	1.9	1.9	2.2	4.6	51.5	1.4	131	13.6	1.6	1.5	1.5
3	2.1	1.9	1.9	2.2	2.2	11.0	1.4	102	1.6	1.7	1.5	1.6
4	2.0	1.9	1.9	2.2	2.2	3.8	1.5	28.9	.9	1.6	1.5	1.6
5	1.9	1.9	1.9	2.2	2.2	2.3	1.5	4.0	.9	1.5	1.5	1.6
6	1.8	1.9	1.9	2.3	2.2	1.4	1.6	2.8	.9	1.4	1.5	1.6
7	1.7	1.9	1.9	2.3	205	1.3	1.6	1.8	.9	8.5	1.5	1.6
8	1.6	1.9	1.9	2.3	894	1.3	1.7	1.6	.9	306	1.6	1.6
9	1.6	1.9	1.9	2.3	93.5	1.3	1.7	1.6	.9	382	1.6	1.6
10	1.7	1.9	2.4	2.2	20.0	1.3	1.6	2.2	.9	1.2	1.6	1.5
11	1.7	1.9	2.4	2.2	3.1	1.3	1.6	2.8	1.0	1.0	1.6	1.4
12	1.7	1.9	2.4	2.1	27.5	1.3	1.6	3.4	1.0	1.0	1.6	1.3
13	1.7	1.9	2.4	2.1	9.0	1.3	1.6	3.0	1.0	1.0	1.7	1.4
14	1.8	1.9	2.4	2.0	2.8	1.3	1.6	2.7	1.1	1.0	1.8	1.6
15	1.8	1.9	2.4	2.0	2.3	1.3	1.6	2.3	1.2	1.0	1.7	1.7
16	1.8	1.9	2.4	1.9	2.3	1.3	1.6	2.1	1.3	1.1	1.6	1.8
17	1.8	145	2.4	1.9	26.6	13.4	1.5	1.8	1.3	1.2	1.6	1.7
18	1.8	38.0	2.4	1.9	11.5	10.5	27.4	1.6	1.3	1.2	1.5	1.7
19	1.9	1,120	2.4	1.9	2.2	86.9	216	1.4	1.3	1.2	1.6	1.6
20	1.9	807	2.4	1.8	2.2	29.0	296	64.0	1.3	339	1.6	1.6
21	1.9	57.0	2.3	1.8	2.2	11.0	383	3.2	771	* 656	1.7	1.5
22	1.9	11.0	2.3	1.8	2.2	5.1	739	1.9	470	147	1.7	1.5
23	1.9	1.9	2.3	1.8	2.2	2.0	378	1.7	58.5	19.0	1.8	1.4
24	1.9	*	1.9	2.3	1.8	2.2	66.7	322	1.6	14.0	5.0	1.4
25	1.9	1.9	2.2	1.8	2.2	190	116	1.4	4.2	2.7	1.9	1.3
26	2.0	1.9	2.2	1.8	471	296	18.5	1.2	1.8	1.9	1.8	1.3
27	2.0	1.9	2.2	6.5	207	81.7	5.4	1.3	1.5	1.9	1.8	1.3
28	2.0	1.9	2.2	2.0	89.2	12.5	3.1	1.3	1.5	1.9	1.7	1.3
29	2.0	2.2	2.2	219	135	3.9	2.0	1.4	1.5	1.8	1.7	1.2
30	2.0	2.2	39.3	125	171	2.0	1.4	1.5	1.6	1.6	1.6	1.2
31	2.0	2.2	7.2			110	1.4			1.5		1.3
Sum		2,219.9		319.8		1,441.7		820.8		* 1,896.1		46.3
	58.1	68.1		2,373.8		2,645.9		1,360.2		49.1		

Month	Current Year 1957			Period 1932-1957					
	Extreme Gage Feet		Extreme Second-Feet		Average Second-Feet	Total Acre-Feet	Acre-Feet		
	High	Low	Day	Day			Average	Maximum	Minimum
Jan.	2	0	2.2	† 8	0	1.6	1.9	115	*
Feb.	7.06	19	5,000	† 2	0	1.9	79.3	4,400	301
Mar.	† 10	0	2.4	† 1	0	1.9	2.2	135	*
Apr.	3.85	29	500	† 20	0	1.8	10.7	634	255
May	8.08	26	6,900	† 3	0	2.2	76.6	4,710	1,235
June	4.60	25	1,720	† 6	1.3	48.1	48.1	2,860	6,368
July	5.40	22	2,640	1	1.3	85.4	5,250	7,458	54,800
Aug.	5.15	1	1,820	26	1.2	26.5	1,630	3,734	28,700
Sept.	10.9	21	13,000	† 4	.9	45.3	2,700	6,015	15,500
Oct.	6.54	8	4,200	† 11	1.0	61.2	3,760	2,244	26,680
Nov.	25	1.9	† 1	1.5	1.6	97.4	*	300	2,980
Dec.	16	1.8	† 29	1.2	1.5	91.8	*	332	3,080
Yearly	10.9		13,000		.9	36.4	* 26,383.2	* 32,851	105,807
									3,958.0

* Estimated * Partly estimated † And other days Ø Mean daily

RIO GRANDE AT JOHNSON RANCH, TEXAS

DESCRIPTION: Water-stage recorder and cable with stand-up cable car equipped for winch and heavy weights, located about 2 miles above Johnson Ranch, 14 miles below Castolon, Brewster County, Texas and Santa Elena Ranch, Chihuahua, and 392.9 river miles below the American Dam at El Paso, Texas. The zero of the gage is 2,045.30 feet above mean sea level, U.S.C. & G.S. datum.

RECORDS: Based on 72 meter measurements during the year and a continuous record of gage heights. Computations by shifting channel methods. Records available: April 1936 through December 1957.

REMARKS: Reservoirs, diversions, and drainage returns modify the river flow at this station.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 58,800 second-feet on September 23, 1938, with a gage height of 19.75 feet. Min. zero several days in 1953 and 1955.

Average Flow in Second-Feet

Daily:	Max.	56,900	Sept. 10, 1942	Min.	0	Several days	1953 &	1955
Monthly:	Max.	23,600	Sept. 1942	Min.	0		May	1953
Yearly:	Max.	4,780		Min.	167			1953

Mean Daily Discharge in Second-Feet 1957 — Annual and Period Summary

Mean Daily Discharge												
Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	379	257	* 562	48.5	655	852	83.5	640	263	213	564	456
2	434	273	* 449	41.0	562	548	* 67.7	334	230	188	510	484
3	430	261	* 520	33.4	340	372	* 55.1	394	346	164	497	508
4	437	282	* 411	33.3	240	257	* 45.2	318	233	146	507	509
5	362	334	* 324	33.2	168	206	* 34.8	160	* 286	144	506	473
6	367	313	299	31.9	142	179	* 26.9	159	451	143	476	437
7	338	1,650	264	28.2	172	185	* 17.0	998	393	141	425	375
8	308	* 376	237	26.8	1,200	169	* 10.1	776	315	160	398	446
9	352	* 324	222	25.4	1,800	132	* 7.2	510	363	2,070	380	416
10	378	* 298	195	24.1	1,010	114	* 5.2	663	404	3,210	374	390
11	392	* 277	213	22.7	643	106	2.6	689	386	1,860	377	338
12	328	* 248	281	20.2	612	99.4	2.2	606	343	1,810	376	326
13	286	411	272	18.1	590	83.8	1.7	616	318	953	370	353
14	324	415	233	15.2	527	65.4	1.7	1,060	225	764	396	341
15	338	320	269	13.0	471	61.7	.9	879	187	678	381	339
16	351	289	238	11.4	535	36.6	0	1,330	192	566	353	403
17	331	358	216	10.8	478	26.9	0	780	231	495	330	411
18	344	603	221	10.1	393	615	0	977	235	443	331	357
19	308	1,540	238	9.4	312	4,480	0	985	227	393	347	364
20	300	2,760	230	6.7	292	1,010	148	1,630	235	846	343	333
21	376	1,080	246	5.0	339	448	142	2,420	439	4,740	317	304
22	403	654	191	3.4	339	279	391	1,790	2,280	6,840	337	307
23	478	620	157	1.3	277	175	553	* 1,010	1,210	4,440	330	362
24	467	606	* 138	.6	259	174	740	* 735	436	1,990	395	369
25	412	* 640	* 119	.4	255	213	807	* 881	412	1,470	403	333
26	412	* 689	* 98.0	2.1	2,480	535	1,460	* 511	405	* 1,190	371	336
27	425	* 763	96.0	2.5	1,390	326	1,250	363	346	* 1,010	418	339
28	368	* 689	84.9	.9	920	156	* 488	277	272	* 713	423	321
29	336		75.0	64.3	1,050	107	* 303	255	229	650	396	299
30	301		65.2	1,230	7,260	131	262	* 204	219	604	386	281
31	274		55.0		2,530		193	* 204		590		269
Sum			17,330	1,773.9		12,142.8	7,098.8	23,154	12,111	39,624	12,017	11,579

Current Year 1957							Period April 1936-1957				
Month	Extreme Gage Feet		Extreme Second-Feet			Average Second-Feet	Total Acre-Feet	Acre-Feet			
	High	Low	Day	High	Low			Average	Maximum	Minimum	
	High	Low	Day	Day	Day	Day	Day	High	High	High	
Jan.	1.81	1.36	23	511	31	269	366	22,500	49,281	86,400	11,300
Feb.	6.49	1.32	7	6,940	16	222	619	34,400	46,604	80,900	9,460
Mar.	1.79	.61	1	562	31	49.8	233	14,300	38,075	85,300	4,440
Apr.	3.80	.02	30	2,400	25	.3	59.1	3,520	19,764	79,300	457
May	12.35	.87	30	20,900	6	130	911	56,000	45,164	240,000	0
June	5.61	.47	19	5,680	18	20.7	405	24,100	56,468	251,000	3,270
July	3.57		26	2,550	†16	0	229	14,100	123,014	620,000	5,930
Aug.	5.30	.78	20	5,290	6	128	747	45,900	124,259	485,000	12,300
Sept.	6.00	1.01	22	6,220	5	170	404	24,000	256,997	1,404,000	9,350
Oct.	7.06	1.10	22	7,950	7	138	1,280	78,600	155,602	929,000	4,940
Nov.	1.86	1.35	1	589	†17	312	401	23,800	57,758	164,000	8,600
Dec.	1.81	1.26	3	531	31	260	374	23,000	49,386	110,000	9,510
Yearly	12.35			20,900	0	503	364,220	1,022,372	3,461,400	120,747	

^a Estimated * Partly estimated f And other days p Mean daily

RIO GRANDE AT LANGTRY, TEXAS

DESCRIPTION: Water-stage recorder and cable with stand-up cable car equipped for winch and heavy weights, located at Langtry, Texas, 24.1 river miles above the confluence of the Pecos River and 614.1 river miles below the American Dam at El Paso, Texas. The zero of the gage is 1,091.69 feet above mean sea level, U.S.C. & G.S. datum.

RECORDS: Based on 60 meter measurements during the year and a continuous record of gage heights. Computations by shifting channel methods. Records available: May 1900 to October 1914; December 1919 through March 1920; January 1924 through December 1957.

REMARKS: Reservoirs, diversions, and drainage returns modify the river flow at this station.

EXTREME FLOWS FROM RECORDS: The highest known gage height was 56.9 feet, which occurred about 3:00 P.M. on June 17, 1922. The discharge for this stage was 204,000 second-feet, which was estimated by extension of the rating curve. The lowest recorded flow was 208 second-feet, which occurred July 12, 1953.

Average Flow in Second-Feet ‡

Daily:	Max. 70,930	Oct. 5, 1932	Min. 216	June 17 & 18, 1953
Monthly:	Max. 23,700	Sept. 1942	Min. 263	May 1953
Yearly:	Max. 5,320	1942	Min. 450	1953

Mean Daily Discharge in Second-Feet 1957 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	558	615	818	334	871	7,420	566	720	521	531	1,090	681
2	584	575	849	323	1,150	* 2,940	474	1,010	498	556	1,030	* 666
3	591	545	855	312	1,200	* 1,810	425	779	656	518	1,020	* 686
4	590	523	732	301	917	* 1,440	389	569	1,820	502	954	* 705
5	616	503	642	292	* 812	* 1,210	379	647	722	494	933	* 738
6	643	497	661	291	708	*	981	377	534	472	475	852
7	655	484	612	290	567	812	342	565	529	452	839	* 749
8	647	499	580	285	516	713	327	512	494	*	765	812
9	606	1,080	557	274	496	650	311	440	529	* 2,300	779	* 719
10	598	1,080	553	268	2,580	1,080	305	614	613	* 1,870	743	* 704
11	564	692	530	270	11,300	741	299	882	600	1,670	713	* 689
12	544	562	497	785	* 2,200	578	288	720	2,240	3,450	697	* 687
13	575	531	483	702	1,220	528	292	755	752	1,880	681	* 680
14	607	514	457	315	827	490	291	891	689	2,920	672	660
15	600	496	443	276	791	462	291	778	653	1,960	670	635
16	555	466	479	275	783	446	291	771	619	1,250	662	622
17	517	714	503	278	2,310	435	291	995	586	1,070	661	635
18	530	1,120	471	514	9,530	456	294	1,090	518	2,270	660	628
19	555	788	493	1,920	2,390	536	362	1,260	481	1,590	633	623
20	580	1,180	772	319	1,100	588	307	1,340	455	856	607	662
21	580	2,430	632	313	800	2,710	340	1,030	459	798	594	638
22	587	3,070	477	447	713	1,840	456	1,320	463	754	593	614
23	666	1,780	473	293	635	1,160	1,130	2,660	1,730	4,380	610	603
24	666	1,460	458	274	601	891	2,350	1,720	1,730	5,680	609	588
25	619	1,020	467	1,510	628	713	759	1,600	1,740	4,610	596	566
26	674	791	447	3,990	1,580	596	668	1,020	1,080	2,930	614	569
27	708	710	415	3,800	25,500	523	812	790	984	2,120	613	607
28	687	763	392	18,300	6,830	476	835	664	774	1,640	651	610
29	649	367	5,840	* 2,640	527	1,320	680	714	1,450	656	589	
30	673	354	1,460	* 1,530	636	1,160	663	642	1,280	630	591	
31	649	346		13,000		814	570		1,140			594
Sum	25,488	" 44,851		34,388			28,589	54,161	* 20,236			
	18,873	16,815		96,725			17,545	24,763	21,874			

Current Year 1957

Month	Extreme Gage Feet			Extreme Second-Feet		Average Second-Feet	Total	Acre-Feet		
	High		Low	Day	High			Average	Maximum	Minimum
	High	Low	Day	Day	Day			Average	Maximum	Minimum
Jan.	1.20	.89	27	715	†17	511	609	37,400	81,655	* 245,000
Feb.	4.22	.86	21	4,130	16	453	910	50,600	71,926	* 117,000
Mar.	2.70	.58	20	2,170	31	336	542	33,400	68,271	118,000
Apr.	16.40	.39	28	22,500	12	264	†1,500	* 89,000	58,086	112,000
May	22.52	.88	27	34,100	10	464	3,120	192,000	91,337	271,000
June	12.00	1.17	1	15,100	†17	425	1,150	68,200	97,870	299,000
July	4.49	.85	23	3,970	17	287	566	34,800	143,739	719,000
Aug.	3.66	1.08	23	3,190	10	412	922	56,700	179,665	* 730,000
Sept.	4.97	1.14	12	5,190	21	448	825	49,100	304,969	1,410,000
Oct.	6.15	1.12	24	6,480	7	441	1,750	107,000	215,242	1,063,000
Nov.	2.04	1.34	3	1,190	21	582	729	43,400	88,405	* 211,000
Dec.	* 1.60	1.30	6	764	26	557	* 653	* 40,100	78,249	135,000
Yearly	22.52	.39		34,100		264	1,110	801,700	1,479,414	3,851,500
										326,100

* Estimated * Partly estimated † And other days ‡ Period 1931-1957

PECOS RIVER NEAR SHUMLA, TEXAS

DESCRIPTION: Bubbler-type water-stage recorder, operated with bottled nitrogen gas, on top of rock ledge about 125 feet above river bed, and light cable (winch-operated, for carrying current meter and light weights only), located 13.0 river miles upstream from the Pecos High Bridge and 18.5 river miles above the confluence with the Rio Grande. This confluence is 638.2 river miles below the American Dam at El Paso, Texas. The zero of the gage is 1,159.52 feet above mean sea level, U.S.C. & G.S. datum.

RECORDS: Based on 58 meter measurements made at low and medium stages during the year and a continuous record of gage heights. Computations by shifting channel methods. Records available: October 8, 1954 through December 1957 at this station. Records are also available for Pecos River near Comstock, 13.0 river miles downstream, from March 17 to December 3, 1898 and May 1900 through October 7, 1954.

REMARKS: Reservoirs, diversions, and drainage returns modify the river flow at this station. The flood of June 1954 reached a gage height of 121.7 feet at this station, or an elevation of approximately 1,281.2 feet above mean sea level.

Mean Daily Discharge in Second-Feet 1957 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	147	137	193	142	1,240	1,840	348	262	186	200	267	230
2	146	136	190	132	863	1,240	336	254	185	194	278	228
3	145	134	189	134	673	1,030	329	246	202	187	1,970	226
4	148	132	185	127	553	902	322	242	627	181	553	229
5	150	132	181	127	472	842	316	246	222	181	422	226
6	149	132	178	126	393	795	306	239	268	181	383	229
7	150	131	177	124	327	743	300	230	260	183	381	238
8	147	132	177	127	297	697	294	223	242	183	375	235
9	145	132	179	121	268	647	* 288	217	225	383	352	238
10	147	135	188	121	3,940	598	286	217	202	254	347	241
11	143	136	196	123	3,550	554	* 285	217	197	241	349	245
12	141	137	178	1,720	2,240	544	283	220	202	274	348	241
13	143	140	170	1,150	22,100	1,180	278	214	191	250	334	239
14	145	142	163	325	11,300	1,290	277	210	184	* 1,940	324	237
15	143	142	158	253	2,360	745	275	202	188	* 1,930	303	233
16	141	146	146	208	1,230	634	273	198	190	1,360	287	231
17	140	210	141	182	1,040	574	266	194	194	535	277	235
18	141	240	147	260	5,470	532	258	195	187	* 417	264	233
19	137	347	146	388	7,070	567	265	202	180	* 358	262	228
20	139	324	205	158	* 1,720	613	250	213	179	* 363	256	219
21	142	266	155	147	* 983	482	239	211	241	* 377	254	217
22	142	246	158	155	912	465	238	203	1,610	* 382	258	212
23	144	243	149	144	859	454	* 238	195	203	359	266	210
24	148	212	145	142	* 810	458	245	192	199	341	270	217
25	148	194	156	280	* 753	* 429	246	194	232	350	260	209
26	147	180	146	336	* 1,000	419	228	192	212	327	254	198
27	149	170	141	396	* 5,850	404	229	190	214	311	249	192
28	150	171	143	2,320	* 3,910	390	233	189	235	295	247	* 193
29	145		137	7,130	1,460	376	241	188	221	292	242	* 194
30	140		132	3,030	1,300	362	268	187	207	280	236	* 182
31	138		138		2,430		264	187		275		* 190
Sum			4,979	5,087	20,128	87,373	20,806	* 8,504	6,569	* 13,384	6,875	
4,480									8,085	10,868		

Current Year 1957										Period Nov. 1954-1957		
Month	Extreme Gage Feet		Extreme Second-Feet			Average Second-Feet		Total Acre-Feet	Acre-Feet			
	High	Low	Day	High	Low	Day	Average		Average	Maximum	Minimum	
Jan.	1.48	1.38	5	153	* 118	134	145	8,890	11,230	12,400	8,890	
Feb.	2.32	1.39	20	371	7	127	178	9,880	10,593	11,600	9,880	
Mar.	2.83	1.38	20	537	30	129	164	10,100	10,533	11,500	10,000	
Apr.	12.32	1.32	29	12,400	9	118	671	39,900	19,170	39,900	8,040	
May	22.22	1.99	10	38,400	10	244	2,820	173,000	65,927	173,000	9,780	
June	6.22	* 2.41	13	3,450	30	* 362	694	41,300	22,273	41,300	5,820	
July		* 1.95	1	* 348	26	213	* 274	*	16,900	* 17,407	29,800	
Aug.	2.06	1.81	1	272	28	183	212	13,000	*	14,907	* 26,500	
Sept.	8.19	1.79	22	5,740	* 2	173	270	16,000	*	17,303	* 29,500	
Oct.	8.65	1.84	15	6,350	5	176	* 432	* 26,500	*	22,233	* 26,500	
Nov.	9.08	1.99	3	6,940	30	226	362	21,600	13,775	21,600	9,100	
Dec.	2.03		11	252	30	* 182	222	13,600	11,800	13,600	9,100	
Yearly	22.22			38,400		118	540	390,670	*	237,151	390,670	114,790

* Estimated * Partly estimated † And other days Ø Mean daily

GOODENOUGH SPRING NEAR COMSTOCK, TEXAS

DESCRIPTION: Water-stage recorder, located 4,000 feet above the confluence with the Rio Grande and 11.75 miles southwest of Comstock, Val Verde County, Texas. The stream from this spring enters the Rio Grande 664.9 river miles below the American Dam at El Paso, Texas. The zero of the gage is 967.42 feet above mean sea level, U.S.C. & G.S. datum.

RECORDS: Based on 25 meter measurements during the year and a continuous record of gage heights. Computations by shifting channel methods. From June 23, 1946, when recorder installation became inoperable, to October 12, 1954, discharges were estimated between measurements. Prior to June 23, 1946, records were based on continuous records of gage heights. Records available: January 1924 through December 1957.

REMARKS: The flow of this spring is very uniform and not modified by diversions or storage. Backwater reaches the station when a discharge of approximately 35,000 second-feet occurs in the Rio Grande at the confluence. A maximum gage height of 43.35 feet was reached by backwater on June 28, 1954.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 846 second-feet on September 18, 1941, with a gage height of 4.57 feet. Min. 65.8 second-feet on February 27, 1957.

Average Flow in Second-Feet

Daily:	Max. " 455	Oct. 1, 1932	Min. 66.8	March 1, 1957
Monthly:	Max. * 421	Oct. 1932	Min. * 69.4	Feb. 1957
Yearly:	Max. 266	1933	Min. * 83.1	1952

Mean Daily Discharge in Second-Feet 1957 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	72.7	68.2	66.8	71.8	253	*	253	129	112	110	105	105
2	73.0	69.1	67.8	71.5	231		236	128	112	109	104	104
3	74.0	70.0	67.5	70.5	207		216	127	112	110	105	104
4	74.3	69.4	67.1	70.4	181		204	125	111	107	105	104
5	74.3	68.7	68.2	68.8	172		195	123	113	108	104	104
6	74.4	68.8	67.8	71.0	164		192	123	113	108	105	104
7	74.4	69.0	68.8	71.6	161		186	122	113	109	104	105
8	75.1	69.1	68.5	67.9	158		180	121	112	109	102	102
9	74.4	70.0	69.5	70.0	162		175	120	112	109	101	101
10	73.8	69.3	69.9	71.4	154		169	118	112	108	99.4	101
11	73.8	68.8	69.5	72.0	*	155	166	118	111	108	99.7	101
12	73.1	68.9	69.9	76.7	158		161	117	110	107	99.7	101
13	72.4	69.0	69.5	74.6	*	160	158	117	109	106	100	100
14	72.5	70.6	70.5	75.2	*	151	153	116	108	106	111	98.7
15	72.5	70.0	71.6	78.0	148		149	115	107	105	119	97.7
16	71.0	68.7	71.9	76.5	166		146	114	106	104	125	96.1
17	70.1	71.0	73.0	76.4	214		142	114	106	104	121	95.7
18	70.7	71.8	73.3	78.3	223		141	113	104	103	118	94.1
19	72.0	71.3	73.0	80.1	191		141	113	104	102	115	93.7
20	72.6	71.4	77.7	82.0	178		143	114	104	101	114	92.0
21	73.2	70.4	72.4	83.9	173		142	116	104	102	113	92.6
22	71.6	69.5	73.4	86.4	169		140	116	106	102	113	92.5
23	70.1	69.3	71.7	86.9	166		138	117	109	105	109	93.8
24	71.4	69.8	71.4	88.8	165		137	116	111	107	109	93.6
25	71.3	69.7	71.1	104	164		137	115	112	109	107	93.5
26	71.1	67.4	71.5	182	168		137	115	112	108	106	94.1
27	70.3	67.2	71.2	184	*	188	136	113	112	107	105	94.7
28	71.6	67.7	69.5	248	*	223	133	112	113	106	105	93.9
29	70.8		70.6	302		216	133	113	112	106	105	93.1
30	70.6		71.8	283		199	132	113	111	105	106	91.0
31	70.5		72.1		*	226		112	111	106		86.6
Sum	1,944.1		3,123.7		4,871		3,404		3,340.8		2,823.7	
	2,243.6		2,188.5		5,644		3,645		3,190		2,936.8	

Current Year 1957

Period Mar. 1929-1957

Month	Extreme Gage Feet		Extreme Second-Feet		Average Second-Feet	Total Acre-Feet	Acre-Feet		
	High	Low	Day	Day			* Average	Maximum	Minimum
Jan.	.73	.62	3	76.1	17	68.7	72.4	4,450	7,677
Feb.	.67	.59	18	71.8	27	65.8	69.4	3,860	6,844
Mar.	2.90	.56	20	215	1	66.1	70.6	4,340	7,473
Apr.	4.00	.60	28	460	8	66.5	104	6,200	7,312
May	4.95	1.62	31	654	16	143	182	11,200	8,045
June	2.68	1.69	1	256	30	130	162	9,660	8,013
July	1.70	1.57	1	130	127	112	118	7,230	8,408
Aug.	1.69	1.53	6	114	120	103	110	6,750	8,107
Sept.	2.25	1.49	3	150	120	99.0	106	6,330	8,654
Oct.	2.73	1.44	9	211	9	97.0	108	6,630	8,888
Nov.	1.46	1.18	1	106	29	89.8	97.9	5,830	8,145
Dec.	1.24	1.00	2	95.0	31	85.2	91.1	5,600	7,988
Yearly	4.95	.56		654		65.8	108	78,080	95,554
								192,840	* 60,320

" Estimated * Partly estimated † And other days

UPPER DEVILS RIVER STATION

DESCRIPTION: Bubbler-type water-stage recorder, operated with bottled nitrogen gas, on rock ledge about 50 feet above river bed, located 26.4 river miles upstream from U.S. 90 Highway bridge and 30.9 river miles above the confluence with the Rio Grande. This confluence is 680.1 river miles below the American Dam at El Paso, Texas. The sea level elevation of the zero of the gage is undetermined.

RECORDS: Based on 17 meter measurements made during the year by wading and a continuous record of gage heights. Computations by shifting channel methods. Records available: August 7, 1954 through December 1957. For additional records, see "Devils River near Del Rio" and "Devils River near Mouth," pages 22 and 23 in this bulletin.

REMARKS: This station is located above slack water from the proposed Diablo Reservoir on the Rio Grande. The June 1954 flood reached a gage height of 35.9 feet at this station.

Mean Daily Discharge in Second-Feet 1957 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1		52.9	51.0	61.2	No Record	15,300	339	307	299	257	299	* 219
2	No	52.9	51.1	55.8		2,600	334	306	296	257	314	* 237
3		52.9	50.1	67.0		1,080	328	305	294	254	333	* 266
4		51.9	52.2	65.9		740	326	304	295	251	521	* 265
5		51.9	50.2	58.0		*	603	324	303	295	249	* 263
6		51.7	49.2	56.0		589	322	302	294	249	* 367	265
7		50.4	49.3	56.0		575	320	301	297	249	322	267
8		50.2	48.3	55.0		561	318	300	296	249	299	269
9		49.0	48.4	53.0		547	316	300	293	265	293	271
10		47.9	48.4	53.0		533	314	299	292	263	296	275
11		47.7	50.5	53.0		519	312	298	298	254	293	* 277
12		47.5	47.6	150		505	310	297	294	249	290	* 273
13		47.3	46.6	71.9		491	308	296	291	249	290	* 273
14		47.1	45.8	64.8		477	306	295	288	*	312	* 287
15		47.2	45.8	61.4		463	304	*	291	288	*	7,700
16		47.2	45.9	59.1		449	302	291	284	*	9,620	* 281
17		52.4	46.8	57.0		435	300	292	284	*	2,270	* 278
18		58.8	46.9	56.0		421	298	298	280	*	848	* 275
19		66.9	46.9	59.1		*	407	299	278	*	586	* 272
20		74.5	51.0	101		401	299	299	280	*	466	* 264
21		69.5	88.6	83.4		395	300	297	278	*	422	* 270
22		68.3	129	71.9		390	301	300	290	*	432	* 271
23		64.8	86.9	66.0		384	301	298	286	*	416	* 269
24		60.4	77.5	64.8		379	302	298	278	*	374	* 306
25		58.1	71.3	63.7		373	302	296	286	*	357	* 267
26		54.9	70.1	63.7		368	303	296	281	*	357	* 294
27		52.9	65.5	64.8		362	304	294	273	*	341	* 267
28		53.0	63.3	* 1,080		356	304	294	270	*	341	* 252
29				5,070		351	305	291	265	*	246	* 269
30				* 1,170		345	306	295	263	*	286	* 264
31				60.0		306	296		*	329		* 241
Sum		1,530.2		* 9,112.5		31,399	9,613	*	9,238		* 28,998	* 8,357
		1,802.9										* 9,415

Current Year 1957

Period # Sept. 1954-1957

Month	Extreme Gage Feet			Extreme Second-Feet			Average Second-Feet	Total Acre-Feet	Acre-Feet					
	High	Low	Day	High	Low	Day			* Average	Maximum	Minimum			
	High	Low	Day	Day										
Jan.	1.67	1.41	20	75.7	14	46.1	54.6	3,040	9,450	10,200	*	8,700		
Feb.	2.32	1.38	21	190	13	44.8	58.2	3,580	6,100	8,130		3,040		
Mar.				*	9,920	† 9	51.9	*	9,940	5,910	7,590		3,580	
Apr.	8.86	1.44	29	*			*	18,100						
May				1	9 [±] 15,300	30	9 [±] 345	1,050	62,300	23,757	62,300		3,940	
June				1	9 [±] 339	18	9 [±] 298	310	19,100	13,227	19,100		3,280	
July				1	9 [±] 307	29	289	*	18,300	10,710	18,300		3,130	
Aug.				1	299	30	260	286	17,000	34,895	105,000		3,180	
Sept.				16	9 [±] 9,620	29	9 [±] 246	*	57,500	22,160	57,500		3,340	
Oct.				5	9 [±] 868	30	9 [±] 266	*	18,700	10,975	18,700		3,210	
Nov.				25	9 [±] 324	1	9 [±] 219	*	16,600	9,908	16,600		3,220	
Dec.										163,152	*	210,260	*	55,340
Yearly														

^u Estimated * Partly estimated † And other days θ Mean daily # Some months missing

DEVILS RIVER NEAR DEL RIO, TEXAS

DESCRIPTION: Water-stage recorder on the U.S. 90 Highway bridge, 12 miles northwest of Del Rio, Texas and 4.5 miles above the confluence with the Rio Grande. Devils River enters the Rio Grande 680.1 river miles below the American Dam at El Paso, Texas. The zero of the gage is 951.80 feet above mean sea level, U.S.C. & G.S. datum.

RECORDS: Based on 12 meter measurements during the year and a continuous record of gage heights. Computations by shifting channel methods. Records available: September 2, 1932 through August 31, 1957 at the present site. After September 1, 1957, computation of records at this station has been limited to high-flow determinations and to those periods when backwater affects the regular station 3.7 miles downstream. Records are also available from May 1900 to March 1914 for a point 2.8 miles below this station and from December 1923 to September 1, 1932 for a point 1.8 miles below this station. For additional records, see "Upper Devils River Station" and "Devils River near Mouth," pages 21 and 23 in this bulletin. In Water Bulletin Number 9 is a graph of river flow from 1871 through 1939.

REMARKS: The monthly flow of this spring-fed river is not modified, but the daily flow is modified by two power dams, with a combined hydroelectric generating capacity of 3,100 kva, the operation of which began in 1929.

EXTREME FLOWS FROM RECORDS: The greatest recorded flow was 597,000 second-feet, which occurred September 1, 1932, with a gage height of 36.60 feet at the present station. Zero flow sometimes occurs for a few hours at this station.

Average Flow in Second-Feet ‡

Daily:	Max. * 227,000	June 28, 1954	Min. 65.3	Oct. 6, 1956
Monthly:	Max. 15,100	Sept. 1932	Min. 105	July 1956
Yearly:	Max. 1,770	1932	Min. 152	1956

Mean Daily Discharge in Second-Feet 1957 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	* 113	133	114	299	816	15,500	458	432				
2	* 147	126	104	101	592	2,800	456	424				
3	133	129	104	107	512	1,280	462	424				
4	139	131	117	193	477	939	460	442				
5	133	133	126	146	424	803	457	460				
6	154	112	110	142	309	745	454	442				
7	119	123	109	149	351	699	452	426				
8	150	133	96.6	165	348	678	449	436				
9	135	125	91.6	102	380	646	447	437				
10	140	127	118	140	500	624	436	439				
11	111	126	108	130	* 15,300	614	427	432				
12	125	128	115	208	* 9,700	614	418	442				
13	130	130	113	416	* 30,800	603	428	443				
14	150	113	104	174	21,000	592	436	436				
15	133	113	92.5	152	2,870	583	428	446				
16	118	129	92.4	174	1,300	573	411	440				
17	113	103	96.4	176	1,560	563	420	432				
18	107	144	99.4	238	7,070	612	438	451				
19	130	153	95.4	748	17,700	591	405	444				
20	110	150	237	195	3,370	544	438	428				
21	131	158	281	179	1,290	541	429	430				
22	144	148	159	202	903	529	438	438				
23	133	155	206	587	746	526	438	438				
24	112	130	147	163	679	514	438	438				
25	125	132	106	216	648	511	430	421				
26	123	151	98.2	181	668	508	422	438				
27	157	87.1	134	267	22,700	478	406	430				
28	111	111	122	2,360	18,000	494	397	421				
29	127		130	3,520	2,410	482	414	422				
30	129		91.2	1,630	1,170	470	406	405				
31	130		177		3,850	432		422				
Sum	3,633.1		13,460		35,656				13,459			
	4,012		3,894.7		168,443				13,430			

Current Year 1957

Month	Extreme Gage Feet			Extreme Second-Feet			Average Second-Feet	Total Acre-Feet	Period 1924-Aug. 1957				
	High		Day	High		Low			Average	Maximum	Minimum		
	High	Low		Day	Day								
Jan.	1.37	.82	22	374	26	82.3	129	7,960	20,700	42,250	7,960		
Feb.	1.48	.50	7	462	7	12.2	130	7,210	19,409	54,500	7,210		
Mar.	1.60	.78	20	572	17	60.9	126	7,730	19,781	43,300	7,730		
Apr.	3.48	.80	29	5,120	2	67.8	449	26,700	23,175	67,800	8,030		
May	9.95	.85	13	50,700	9	86.0	5,430	334,000	45,958	356,900	8,250		
June	6.94	1.29	1	24,100	30	462	1,190	70,700	63,249	* 678,000	7,180		
July	1.32	.76	1	467	19	89.0	433	26,600	44,374	377,000	6,460		
Aug.	1.42	1.00	18	584	17	240	434	26,700	24,510	107,000	6,760		
Sept.									69,073	895,990	7,210		
Oct.									41,698	349,000	9,780		
Nov.									23,000	60,300	7,330		
Dec.									21,499	49,520	* 7,590		
Yearly									416,426	1,284,080	110,110		

* Partly estimated † Period 1932-1957

DEVILS RIVER NEAR MOUTH

DESCRIPTION: Water-stage recorder and rock and concrete low-flow station control, located 3.7 river miles downstream from the U.S. 90 Highway bridge and .8 mile above the confluence with the Rio Grande. This confluence is 680.1 river miles below the American Dam at El Paso, Texas. The zero of the gage is 911.00 feet above mean sea level, U.S.C. & G.S. datum.

RECORDS: Based on 27 meter measurements by wading during the year, a continuous record of gage heights, and a stable rating curve for discharges up to 600 second-feet; above 600 second-feet and when affected by backwater from the Rio Grande, records are based on discharges at station 3.7 miles upstream. Records available: August 1954 through December 1957. For additional records, see "Upper Devils River Station" and "Devils River near Del Rio," pages 21 and 22 in this bulletin.

REMARKS: The monthly flow of this spring-fed stream is not modified, but the daily flow is modified by two power dams, with a combined hydroelectric generating capacity of 3,100 kva, the operation of which began in 1929. During the flood of June 1954, the peak flow of Devils River, affected by backwater from the Rio Grande, reached an elevation of 969.00 feet at the steam electric plant, located approximately 2,000 feet upstream from this station.

Mean Daily Discharge in Second-Feet 1957 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	138	160	156	312	* 957	* 15,600	548	520	512	495	541	470
2	173	157	146	189	720	* 2,900	554	506	516	497	556	488
3	155	160	143	128	594	* 1,370	555	506	528	485	575	557
4	165	162	149	228	544	* 1,030	562	505	527	496	763	470
5	157	164	159	182	491	* 896	563	505	516	483	1,110	485
6	183	143	141	174	362	* 838	559	494	522	477	808	520
7	144	154	140	182	423	* 792	555	506	493	473	672	508
8	177	164	130	193	425	* 771	557	520	483	520	619	519
9	160	160	125	139	481	* 739	558	518	520	811	587	513
10	161	159	147	168	594	* 717	539	521	492	601	597	524
11	132	159	140	163	215,600	* 707	517	515	516	581	591	513
12	147	162	146	450	215,980	* 707	527	522	550	518	591	501
13	153	163	145	591	21,310	* 696	558	531	512	492	535	504
14	177	143	141	227	21,200	* 685	559	525	486	554	535	524
15	160	139	128	189	21,340	* 676	536	532	458	7,940	535	526
16	143	163	128	204	21,570	* 666	513	531	460	9,860	535	543
17	137	141	133	207	21,830	* 656	521	535	470	2,510	535	540
18	133	179	133	250	21,735	* 705	535	542	488	1,090	555	539
19	152	193	132	* 889	218,000	* 684	496	541	467	828	536	538
20	139	184	440	245	21,340	* 652	534	536	498	708	532	524
21	164	192	390	231	* 1,470	636	511	534	501	664	532	527
22	172	181	206	269	* 1,170	626	519	534	890	674	541	518
23	159	184	248	* 745	* 1,040	621	519	534	570	658	487	526
24	140	156	162	255	* 1,000	595	524	532	505	616	500	557
25	161	154	142	268	* 950	600	518	527	552	599	532	575
26	160	176	132	244	* 1,040	600	514	526	552	599	527	545
27	199	122	174	330	* 23,000	570	504	521	553	583	522	549
28	148	140	162	2,400	* 18,300	585	504	524	527	583	522	503
29	166	168	29	3,550	* 2,680	575	512	519	492	488	532	516
30	170	140	* 1,540	* 1,390	555	507	518	508	528	492	515	492
31	166		209		* 4,130	525	517			571		
Sum	4,514	5,235	* 15,142		* 38,450		16,197		15,664	36,982	17,495	16,129
	4,891											

Current Year 1957

Period Aug. 1954-1957

Month	Extreme Gage Feet			Extreme Second-Feet		Average Second-Feet	Total Acre-Feet	Acre-Feet								
	High	Low	Day	High	Low			Average	Maximum	Minimum						
Jan.	1.93	.99	27	446	110	108	158	9,700	* 16,700	* 22,400						
Feb.	1.97	.70	7	465	7	51.9	161	8,950	14,183	17,900						
Mar.	3.43	.98	20	* 1,460	† 6	106	169	10,400	14,300	17,600						
Apr.		.98	29	* 5,000	3	106	* 505	* 30,000	* 19,233	* 30,000						
May	16.98	1.17	13	* 50,700	9	155	* 5,650	* 347,000	* 125,600	* 347,000						
June	2.35	1	24	2,200	30	550	* 1,280	* 76,300	* 33,100	* 76,300						
July	2.38	1.69	4	567	19	289	532	32,700	* 22,237	32,700						
Aug.	2.49	2.02	18	671	6	425	522	32,100	23,415	32,100						
Sept.	3.48	2.01	22	1,260	19	411	522	31,100	* 46,488	* 118,000						
Oct.	8.06	2.00	15	16,100	7	420	1,190	73,400	* 36,000	73,400						
Nov.	3.42	2.09	4	1,220	† 21	443	583	34,700	22,950	34,700						
Dec.	2.42	1.72	24	621	2	298	520	32,000	* 21,820	32,000						
Yearly		.70		50,700		51.9	*	992	*	718,350	*	396,026	*	718,350	*	145,600

* Estimated * Partly estimated † And other days

RIO GRANDE BELOW DIABLO DAM SITE

DESCRIPTION: Bubbler-type water-stage recorder, operated with bottled nitrogen gas, and cable with stand-up cable car equipped for winch and heavy weights, located 10.5 river miles above the international highway bridge between Del Rio, Texas and Cd. Acuña, Coahuila, 2.9 river miles below the confluence of the Devils River, and 683.0 river miles below the American Dam at El Paso, Texas. The zero of the gage is 893.79 feet above mean sea level, U.S.C. & G.S. datum.

RECORDS: Based on 59 meter measurements during the year and a continuous record of gage heights. Computations by shifting channel methods. Records available: September 1, 1954 through December 1957. Records are also available from May 1900 to April 1915 for a station 1.9 miles upstream; from December 1919 to March 1920 for a station 1.6 miles downstream near McKee's Switch; from December 1923 to July 2, 1941 for a station approximately 10.3 miles downstream and from July 2, 1941 through August 1954 for the station at the international highway bridge 10.5 miles downstream.

REMARKS: Reservoirs, diversions, and drainage and power plant returns modify the river flow at this station.

EXTREME FLOWS FROM RECORDS: The flood of June 1954 reached a peak gage height of 55.72 feet and a maximum discharge of 1,158,000 second-feet, determined by slope-area computation. This is the greatest rate of discharge recorded at any point on the Rio Grande.

Mean Daily Discharge in Second-Feet 1957 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1,000	1,140	1,260	955	5,890	35,600	1,930	1,920	1,560	1,670	2,090	1,680
2	1,020	1,120	1,270	894	4,050	11,500	1,820	1,780	1,510	1,620	2,020	1,750
3	1,000	1,090	1,340	883	* 3,560	6,000	1,700	2,100	1,500	1,540	2,140	1,760
4	1,040	1,050	1,300	917	* 3,040	4,470	1,620	1,910	1,690	1,510	3,770	1,670
5	1,040	1,050	1,280	830	* 2,360	3,910	1,570	1,640	3,010	1,470	3,070	1,660
6	1,060	1,030	1,160	788	2,090	3,510	1,510	1,740	1,910	1,430	2,300	1,720
7	1,070	1,020	1,160	777	1,980	3,190	1,500	1,620	1,550	1,390	2,010	1,760
8	1,110	1,050	1,110	777	1,760	2,990	1,500	1,630	1,560	1,410	1,960	1,760
9	1,110	1,040	1,080	757	2,060	2,660	1,490	1,570	1,560	3,430	1,940	1,730
10	1,100	1,420	1,070	752	1,820	2,480	1,460	1,470	1,510	2,460	1,940	1,720
11	1,060	1,540	1,090	746	* 43,000	2,880	1,420	1,540	1,630	1,820	1,900	1,700
12	1,050	1,230	1,080	4,310	* 14,800	2,570	1,420	1,880	1,760	2,910	1,880	1,670
13	1,030	1,090	1,050	4,870	* 40,700	2,280	1,420	1,740	2,810	3,570	1,830	1,730
14	1,070	1,030	1,030	2,360	* 49,500	3,050	1,410	1,730	1,740	3,320	1,840	1,720
15	1,120	1,000	980	1,250	* 12,300	3,000	1,370	1,820	1,620	9,420	1,800	1,720
16	1,110	1,030	955	1,070	5,780	2,280	1,340	1,720	1,600	12,600	1,750	1,690
17	1,060	1,050	954	960	4,890	2,130	1,320	1,690	1,550	6,110	1,730	1,660
18	1,020	1,360	964	951	* 19,400	2,180	1,320	1,940	1,530	3,220	1,750	1,640
19	1,020	1,680	974	3,410	* 34,600	2,550	1,280	2,040	1,430	3,840	1,710	1,590
20	1,020	1,500	1,720	2,190	* 11,400	2,240	1,360	2,180	1,410	2,770	1,680	1,590
21	1,060	1,780	1,900	1,050	5,400	2,190	1,300	2,280	1,380	2,290	* 1,640	1,630
22	1,090	3,140	1,270	969	4,040	4,080	1,280	2,040	2,530	2,220	* 1,610	1,570
23	1,080	3,040	1,080	1,960	3,620	3,180	1,450	2,440	2,330	2,240	1,610	1,540
24	1,060	2,090	994	890	3,130	2,550	2,410	3,280	2,580	6,290	1,660	1,570
25	1,060	1,830	947	2,290	3,120	2,310	2,920	2,780	2,760	5,960	1,630	1,540
26	1,090	1,480	947	* 15,300	5,980	2,120	1,880	2,420	2,680	4,810	1,630	1,480
27	1,170	1,260	992	3,670	41,700	1,950	1,720	2,050	2,120	3,490	1,640	1,500
28	1,170	1,190	978	* 16,800	45,900	1,840	1,880	1,840	1,930	2,980	1,650	1,490
29	1,150		941	* 19,700	11,600	1,780	1,920	1,710	1,750	2,600	1,740	1,500
30	1,140		859	* 11,600	6,060	1,750	2,390	1,710	1,710	2,330	1,710	1,490
31	1,160		900		13,600		2,200	1,630		2,290		1,480
Sum	39,330	34,635		* 104,676	409,130	125,130	51,110	59,840	56,210	105,010	50,710	
	33,340									56,210	57,630	

Current Year 1957

Month	Extreme Gage Feet			Extreme Second-Feet		Average Second-Feet	Total	Acre-Feet			
	High		Low	High	Low			Average	Maximum	Minimum	
	High	Low	Day	Day	Day						
Jan.	2.03	1.68	27	1,390	2	945	1,080	66,100	76,500	82,400	66,100
Feb.	3.43	1.70	22	3,990	7	938	1,400	78,000	74,433	78,000	71,000
Mar.	3.45	1.53	20	4,100	31	812	1,120	68,700	68,200	* 69,100	66,800
Apr.	10.82	1.39	26	28,900	11	677	* 3,490	* 208,000	105,833	* 208,000	54,100
May	21.26	2.13	11	85,100	† 8	1,610	13,200	* 812,000	* 341,200	* 812,000	60,600
June	14.70	2.07	1	47,200	† 29	1,720	4,170	248,000	143,267	248,000	56,800
July	3.37	1.69	24	4,070	19	1,110	1,650	101,000	110,000	183,000	46,000
Aug.	3.11	1.77	24	3,680	11	1,330	1,930	119,000	155,167	279,000	67,500
Sept.	3.29	1.72	22	4,000	21	1,290	1,870	111,000	185,975	* 393,000	71,900
Oct.	7.45	1.75	16	16,000	7	1,340	3,390	208,000	181,750	208,000	135,000
Nov.	3.63	1.93	3	4,700	26	1,540	1,920	114,000	93,275	114,000	68,200
Dec.	2.12	1.86	8	1,850	25	1,410	1,640	101,000	83,825	101,000	65,200
Yearly	21.26	1.39		85,100		677	* 3,090	* 2,234,800	1,619,425	2,234,800	858,800

* Estimated * Partly estimated † And other days

ARROYO LAS VACAS NEAR CD. ACUNA, COAHUILA

DESCRIPTION: Water-stage recorder and cable with sit-down cable car, and control wall with notch opening capacity of 777 second-feet, located 1.5 miles upstream from Cd. Acuña, Coahuila and 1.8 miles upstream from the confluence of Arroyo las Vacas with the Rio Grande at a point just above the Del Rio-Cd. Acuña International Bridge. This confluence is 693.5 river miles below the American Dam at El Paso, Texas. The zero of the gage is 885.82 feet above mean sea level, U.S.C. & G.S. datum.

RECORDS: Based on 94 meter measurements during the year, a stable rating curve up to 777 second-feet, and a continuous record of gage heights. Computations by shifting channel methods for flows above notch capacity. Records available: Occasional estimates from June 1935 to March 19, 1938 and continuous records from March 20, 1938 through December 1957.

REMARKS: The low flow of this stream is from springs and is modified by irrigation diversions upstream. The reinforced concrete control wall, 52 feet downstream from the recorder, was built in January 1955 and the zero of the gage was changed to coincide with the notch elevation. On June 28, 1954, backwater from the Rio Grande reached an elevation of 902.49 feet at this station.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 25,780 second-feet on September 30, 1954, with a gage height of 16.14 feet. Min. no flow on several occasions in September and December 1956 and in January 1957.

Average Flow in Second-Feet ‡

Daily:	Max. 4,030	Apr. 28, 1957	Min. 0	Several days Dec. 1956 & Jan. 1957
Monthly:	Max. 279	Apr. 1957	Min. .4	Several months 1952, 1953 & 1954
Yearly:	Max. 44.1	1954	Min. 2.8	1952

Mean Daily Discharge in Second-Feet 1957 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1.4	1.4	1.4	6.7	29.7	29.7	3.5	3.5	1.4	1.4	3.5	3.5
2	1.4	1.4	1.4	3.5	19.4	19.4	3.5	3.6	1.4	1.4	3.5	3.6
3	1.4	1.4	1.4	3.5	19.4	19.4	3.5	3.6	1.5	1.4	3.5	3.6
4	1.4	1.4	1.4	3.5	10.6	14.8	3.5	3.6	1.5	1.4	10.6	3.6
5	1.4	1.5	1.4	3.5	10.6	14.8	3.6	3.6	1.5	1.4	10.6	3.6
6	1.4	1.4	1.4	3.5	10.6	14.8	3.5	3.6	1.5	1.4	10.6	3.6
7	1.4	1.4	1.4	3.5	10.6	10.6	3.5	3.6	1.4	1.4	3.5	3.6
8	1.4	1.4	1.4	3.5	6.7	10.6	3.5	3.5	1.4	1.4	3.5	3.5
9	1.4	1.4	1.4	3.5	6.7	10.6	3.6	3.5	1.4	901	3.5	3.5
10	0	1.5	101	1.4	12.0	10.6	3.5	3.5	1.4	14.8	3.5	3.5
11	0	1.4	29.7	1.4	17.0	6.7	3.5	3.5	1.4	6.7	3.5	3.5
12	1.4	1.4	1.4	865	42.0	9.2	3.5	3.5	1.4	3.5	6.7	3.5
13	1.4	1.4	1.4	35.0	117	6.7	3.5	1.4	1.4	3.5	10.6	3.5
14	1.4	1.5	1.4	10.6	29.7	6.7	3.6	1.4	1.4	3.5	10.6	3.5
15	1.4	1.4	1.4	6.7	19.4	6.7	3.5	1.4	1.4	3.5	6.7	3.5
16	1.4	1.4	1.4	3.5	35.0	6.7	3.5	1.4	1.4	3.5	6.7	6.7
17	1.4	1.4	1.4	3.5	367	6.7	3.5	1.4	1.4	3.5	3.5	3.5
18	1.4	3.5	1.4	146	357	6.7	3.6	1.4	1.4	3.6	3.6	3.5
19	1.4	3.5	1.4	235	48.0	36.0	3.5	1.4	3.5	3.6	3.5	3.5
20	1.4	1.4	3.5	10.6	29.7	14.8	3.5	3.5	1.4	3.5	3.5	1.4
21	1.4	1.4	1.4	6.7	24.4	6.7	3.5	1.4	1.4	3.5	3.5	3.5
22	1.4	1.4	1.4	3.5	19.4	6.7	3.5	1.4	72.0	3.5	3.5	3.5
23	1.4	1.4	1.4	3.5	19.4	6.7	3.6	1.4	3.5	3.5	6.7	3.5
24	1.4	3.5	3.5	3.5	19.4	6.7	3.5	1.4	3.5	10.6	3.5	3.5
25	1.4	1.4	1.4	590	14.8	6.7	3.5	1.4	3.5	10.6	3.5	3.5
26	3.5	1.4	1.4	1,370	66.0	6.7	3.5	1.4	3.5	3.5	3.5	3.5
27	3.5	1.4	1.4	179	114	6.7	3.6	1.4	3.5	3.5	3.5	3.5
28	3.5	1.4	1.4	4,030	24.4	6.7	3.5	1.4	1.5	3.5	3.5	3.5
29	3.5	1.4	1.4	759	19.4	6.7	3.5	1.4	1.5	3.5	3.5	3.5
30	3.5	1.4	76.3	19.4	6.7	3.5	1.4	1.5	3.5	3.5	3.5	3.5
31	3.5	738		533			3.6	3.5	3.5	3.5	3.5	3.5
Sum	45.8	912.1		8,374.9	329.2		75.5		1,003.7	110.2		
	53.2			2,071.7	109.2		128.4		167.7			

Current Year 1957

Period 1938-1957

Month	Extreme Gage Feet			Extreme Second-Feet		Average Second-Feet	Total Acre-Feet	Acre-Feet		
	High	Low	Day	High	Low			Average	Maximum	Minimum
Jan.	.07	0	†26	3.5	†10	0	1.7	106	335	910
Feb.	.07	.03	† 3	3.5	† 1	1.4	1.6	90.8	596	5,950
Mar.	6.04	.03	31	5,970	† 1	1.4	29.4	1,810	752	2,600
Apr.	9.32	.03	28	11,120	† 2	1.4	279	16,610	1,753	16,610
May	5.64	.10	31	5,050	† 8	6.7	66.8	4,110	1,473	5,090
June	.89	.07	19	215	124	3.5	11.0	653	1,292	12,290
July	.10	.07	1	6.7	† 1	3.5	3.5	217	1,254	8,230
Aug.	.07	.03	† 1	3.6	† 12	1.4	2.4	150	740	3,850
Sept.	1.57	.03	22	579	† 1	1.4	4.3	255	1,505	6,850
Oct.	5.61	.03	9	4,979	† 1	1.4	32.4	1,990	1,318	9,390
Nov.	.13	.07	† 4	10.6	† 1	3.5	5.6	333	311	21.0
Dec.	.10	.03	† 6	6.7	† 19	1.4	3.6	219	272	704
Yearly	9.32	0		11,120	0		36.7	26,543.8	11,601	31,995.7
										2,066.7

^a Estimated ^b And other days ^c Period 1938-1957

SAN FELIPE CREEK NEAR DEL RIO, TEXAS

DESCRIPTION: Bubbler-type water-stage recorder, operated with bottled nitrogen gas, and cable with stand-up cable car equipped for winch and heavy weights, at Silos Farm Road bridge 1.75 miles south of Del Rio, Texas and 2 miles above the confluence with the Rio Grande. This stream enters the Rio Grande 695.1 river miles below the American Dam at El Paso, Texas and 12.1 river miles below the gaging station on the Rio Grande below Diablo Dam site. The zero of the gage is 877.43 feet above mean sea level, U.S.C. & G.S. datum.

RECORDS: Based on 27 meter measurements during the year and a continuous record of gage heights. Computations by shifting channel methods. Records available: September 1, 1931 through December 1957.

REMARKS: Municipal diversions at Del Rio and irrigation diversions greatly modify the flow of this spring-fed creek at this station. Backwater from the Rio Grande reaches this station when the Rio Grande near Del Rio reaches a stage of 15 feet, or a flow of about 60,000 second-feet. The highest gage height of record corresponded to elevation 901.94 feet, on June 28, 1954, caused by combined creek flow and backwater from the Rio Grande.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 45,000 second-feet on June 14, 1935, with a gage height of 23.20 feet. Min. .4 second-foot on July 20, 1953.

Average Flow in Second-Feet

Daily:	Max. ^a 16,200	June 14, 1935	Min. 1.5	July 21, 1953
Monthly:	Max. * 805	June 1935	Min. 4.6	July 1953
Yearly:	Max. * 136	1935	Min. 25.1	1953

Mean Daily Discharge in Second-Feet 1957 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	28.9	12.4	9.0	11.8	71.8	106	57.3	61.2	55.1	70.2	82.6	82.7
2	29.0	7.6	9.4	9.6	69.9	91.8	55.0	58.2	54.2	69.5	82.5	84.1
3	29.8	7.6	9.4	8.6	67.9	86.6	54.7	56.5	52.3	66.7	86.2	82.8
4	29.9	7.6	10.4	8.0	68.3	84.0	48.1	61.5	54.2	67.1	86.1	79.1
5	27.3	7.6	8.8	9.4	69.7	82.7	43.4	61.6	54.2	66.1	84.8	74.3
6	29.7	7.7	7.7	11.2	67.8	82.8	53.9	63.7	55.1	67.1	84.7	67.6
7	29.3	7.3	8.9	13.2	69.3	80.3	63.0	66.8	59.9	65.0	84.6	66.5
8	28.8	6.6	10.9	12.4	70.8	80.3	62.7	72.4	63.8	64.0	84.5	67.9
9	28.4	7.8	10.5	12.9	71.1	79.1	61.4	73.7	63.6	1,200	87.0	69.1
10	25.7	10.1	16.9	12.2	221	79.1	58.1	74.4	61.3	84.3	88.2	72.6
11	24.6	9.7	29.5	11.1	2,670	76.6	57.9	74.0	60.1	78.2	84.2	71.7
12	25.1	11.9	11.4	410	141	109	59.6	70.2	57.8	78.1	85.5	69.5
13	24.1	12.3	9.7	23.5	869	83.0	55.9	69.8	56.6	78.1	85.4	69.9
14	24.6	11.5	9.4	15.1	91.1	80.9	59.3	69.4	52.5	78.1	84.0	70.2
15	24.4	10.7	8.4	14.7	73.6	81.2	57.6	56.4	52.3	78.1	83.9	70.6
16	26.2	9.0	9.1	13.8	81.9	80.2	52.1	53.2	52.1	76.9	85.1	70.9
17	26.0	12.4	9.5	14.1	256	80.6	51.5	53.2	50.8	75.7	83.7	70.2
18	25.9	12.0	7.1	207	274	78.5	51.8	54.2	50.6	76.9	81.2	70.5
19	17.4	13.0	7.5	952	85.2	82.6	52.2	54.2	49.5	77.9	77.3	69.7
20	17.3	12.1	39.6	36.0	78.8	82.9	52.6	54.2	49.3	77.8	77.2	70.7
21	17.3	11.7	15.3	69.6	77.3	78.4	55.7	59.1	54.2	81.3	77.1	70.5
22	16.7	11.4	9.3	99.1	79.7	75.8	58.2	64.2	322	79.9	77.0	76.1
23	17.7	11.4	10.6	47.3	80.9	76.7	59.6	59.1	63.6	93.1	76.9	77.0
24	16.0	10.9	10.9	49.4	80.7	76.4	60.0	58.1	68.4	77.4	76.8	82.9
25	14.9	10.1	10.3	58.3	80.6	75.1	64.4	59.1	142	78.4	76.7	86.5
26	14.8	10.2	8.9	49.2	82.9	72.5	65.8	59.1	84.8	78.3	76.6	87.6
27	15.7	9.7	7.3	93.6	* 87.9	74.6	67.0	57.0	70.9	78.2	76.5	100
28	15.7	9.7	7.2	2,780	* 78.8	73.1	68.1	58.1	73.5	75.8	76.4	87.3
29	15.6		11.5	94.7	80.0	74.0	69.3	58.1	73.9	76.8	76.3	87.1
30	15.5		11.7	73.7	81.3	70.4	69.3	56.0	73.2	75.6	82.7	86.9
31	15.4		171	2,590			68.3	56.0	78.9			84.1
Sum	697.7	282.0	5,221.5	8,868.3	2,435.2	1,813.8	1,902.7	2,131.8	3,469.5	2,451.7	2,376.6	

Current Year 1957

Period Sept. 1931-1957

Month	Extreme Gage Feet			Extreme Second-Feet		Average Second-Feet	Total Acre-Feet	Acre-Feet			
	High	Low	Day	High	Low			Average	Maximum	Minimum	
Jan.	1.21	.78	6	40.8	31	11.9	22.5	1,380	3,639	7,070	
Feb.	.88	.50	1	17.0	9	2.6	10.1	559	2,781	8,630	
Mar.	4.99	.49	31	1,100	27	2.9	16.7	1,030	2,410	5,030 *	
Apr.	13.10	.60	28	9,800	5	4.6	174	10,400	2,972	10,400	
May	15.12	1.23	11	13,300	10	50.9	286	17,600	4,372	17,600	
June	2.60	1.26	12	260	30	51.8	81.2	4,830	5,165 *	47,900	
July	1.48	1.14	31	77.4	4	40.4	58.5	3,600	3,107 *	8,800	
Aug.	1.54	1.22	11	84.8	16	48.6	61.4	3,770	2,810	6,060	
Sept.	6.19	1.20	22	1,790	14	45.1	71.1	4,230	4,084	19,100	
Oct.	10.80	1.31	9	6,370	7	59.8	112	6,880	3,956	8,470	
Nov.	1.67	1.46	3	101	19	72.7	81.7	4,860	3,044	5,570	
Dec.	2.22	1.34	27	185	6	59.1	76.7	4,710	3,056	5,870	
Yearly	15.12	.49	13,300		2.6	88.2	63,849	41,396	*	98,137	18,201

* Estimated * Partly estimated

RIO GRANDE BELOW MAVERICK DAM

DESCRIPTION: Water-stage recorder located 4.7 miles below the Maverick Irrigation District diversion dam, 30.0 miles above the Maverick Hydro Plant and 716.7 river miles below the American Dam at El Paso, Texas. The zero of the gage is 804.79 feet above mean sea level, U.S.C. & G.S. datum.

RECORDS: Based on 67 meter measurements, by wading, during the year, 46 by the Mexican and 21 by the United States Section of this Commission. Computations by shifting channel methods. There are no facilities for measuring high flows at this station. Records available: January 1, 1956 through December 31, 1957.

REMARKS: This station was placed in operation on November 26, 1955. Irrigation diversions 5.9 miles upstream largely control the flow at this station.

EXTREME FLOWS FROM RECORDS: Maximum flow not recorded. Min. 2.8 second-feet several days in June, July, and August 1956.

Mean Daily Discharge in Second-Feet 1957 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	95.7	201	212	177			855	855	509	590	1,130	512
2	* 95.7	164	267	95.7			830	678	449	530	1,040	569
3	95.7	133	296	68.2			756	611	413	487	974	593
4	95.7	124	296	48.4	1,840		707	855	431	431	1,870	569
5	114	114	238	35.0	1,510		632	611	936	396	1,980	512
6	105	95.7	225	35.0	1,310		590	590	1,220	343	1,380	569
7	164	74.9	164	35.0	1,130		569	590	548	360	1,040	622
8	164	81.6	153	35.0	1,020	1,690	548	568	431	327	950	622
9	212	74.9	132	29.3	975	1,550	509	530	466		918	622
10	164	81.6	95.7	29.3	1,220	1,440	488	431	413	1,510	886	593
11	114	85.5	299	29.3			1,480	413	378	431	908	593
12	95.7	1,350	132	466			1,580	413	611	706	801	512
13	95.7	989	95.7				1,310	396	678	1,070	777	512
14	95.7	668	68.2				1,320	396	590	805	1,440	540
15	132	74.9	62.2	745				396	653	509	696	540
16	132	81.6	62.2	238							696	512
17	105	81.6	62.2	132							671	487
18	81.6	88.3	68.2								671	512
19	68.2	* 632	74.9								625	512
20	74.9	* 756	115								625	466
21	81.6	* 569	1,040								600	466
22	105	* 1,420	632								572	487
23	105	* 2,590	153								572	466
24	105	1,550	95.7	593							551	512
25	74.9	989	62.2	119							572	512
26	88.3	653	68.2				1,720	1,160	1,040	1,250	1,380	572
27	143	378	68.2					1,020	654	936	1,070	551
28	225	212	68.2					908	706	756	830	551
29	212		68.2					855	731	632	756	445
30	201		68.2					780	925	569	632	572
31	177		* 1,190						1,070	569	1,130	466
Sum				15,082.1						23,582		16,138
3,818.4				6,632.2						21,763		24,993
18,450												

Current Year 1957

Month	Extreme Gage			Extreme Second-Feet			Average Second- Feet	Total Acre-Feet	Acre-Feet				
	Extreme Gage		Day	Extreme Second-Feet		Day			Average	Maximum	Minimum		
	High	Low		High	Low								
Jan.	1.37	.66	28	311	† 19	68.2	123	7,570	14,290	21,010	7,570		
Feb.	3.84	.62	23	* 3,080	10	62.2	539	29,920	24,820	29,920	19,720		
Mar.	3.97	.59	31	* 3,310	17	56.5	214	13,150	12,285	13,150	11,420		
Apr.	11.42	.36	28		4	15.6							
May	18.37	2.17	28		† 8	805							
June	13.29	2.13	1		30	780							
July	3.48	1.18	25	* 2,150	20	225	595	36,600	18,980	36,600	1,360		
Aug.	3.31	1.44	24	* 1,920	† 11	343	761	46,770	29,995	46,770	13,220		
Sept.	4.07	1.35	22	* 3,010	20	297	725	43,170	31,710	43,170	20,250		
Oct.	8.10	1.38	16		8	311							
Nov.	3.67	1.67	4	2,800	27	512	833	49,570	32,215	49,570	14,860		
Dec.	1.87	1.51	† 7	650	31	378	521	32,010	20,960	32,010	9,910		
Yearly	18.37	.36				15.6							

* Estimated * Partly estimated † And other days # Some months missing

PINTO CREEK NEAR DEL RIO, TEXAS

DESCRIPTION: Bubbler-type water-stage recorder, operated with bottled nitrogen gas, on top of a ledge 45 feet above the creek bed, a solid rock and concrete station control, and a cable with stand-up cable car equipped for winch and heavy weights, located 1.6 miles above the confluence with the Rio Grande. This creek enters the Rio Grande 718.1 river miles below the American Dam at El Paso, Texas. The zero of the gage is 813.68 feet above mean sea level, U.S.C. & G.S. datum.

RECORDS: Based on 38 meter measurements during the year and a continuous record of gage heights. Records available: September 1953 through December 1957 at this station and November 22, 1928 through August 1955 at a site 3.9 miles upstream.

REMARKS: Small irrigation diversions modify the flow of this spring-fed creek at this station. When flow in the Rio Grande at the confluence of this creek exceeds about 80,000 second-feet, backwater may reach this station. Backwater from the Rio Grande flood of June 1954 reached a gage height of 28.8 feet, or an elevation of 842.50 at this station.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 186,000 second-feet on June 24, 1948, with a gage height of 32.0 feet. Min. frequently no flow.

Average Flow in Second-Feet

Daily:	Max. * 28,200	June 24, 1948	Min. 0	Frequently
Monthly:	Max. * 953	June 1948	Min. 0	Frequently
Yearly:	Max. 105	1932	Min. 1.8	1945

Mean Daily Discharge in Second-Feet 1957 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0	0	0	32.7	27.9	881	12.7	6.1	2.6	10.1	12.3	12.9
2	0	0	0	5.2	14.3	152	12.3	5.7	2.6	9.8	12.3	12.9
3	0	0	0	1.9	8.5	87.1	12.1	5.4	2.6	9.6	12.5	13.3
4	0	0	0	.7	6.1	60.8	11.9	5.2	2.7	9.2	13.7	13.3
5	0	0	0	.4	4.6	47.1	11.5	4.6	3.0	8.4	14.0	13.3
6	0	0	0	.3	3.9	37.0	11.5	4.3	3.2	8.7	13.7	13.1
7	0	0	0	.2	3.7	30.4	10.9	4.3	10.2	7.3	13.7	13.3
8	0	0	0	0	3.7	27.2	10.5	3.8	6.4	7.3	13.3	13.5
9	0	0	0	0	3.6	25.7	10.0	3.4	6.7	584	13.3	13.1
10	0	0	0	0	3.1	24.2	9.4	3.3	5.4	93.4	13.5	12.9
11	0	0	0	0	2,260	23.3	9.2	3.3	4.6	25.1	14.2	12.7
12	0	0	0	581	389	23.0	9.2	3.3	3.9	15.2	14.8	12.5
13	0	0	0	39.7	667	22.7	9.0	3.2	5.0	13.1	15.0	12.5
14	0	0	0	5.3	200	22.4	8.7	3.0	4.8	12.7	14.6	12.5
15	0	0	0	2.5	49.4	21.8	8.4	3.0	3.9	12.7	14.4	12.7
16	0	0	0	1.9	2,890	20.0	8.1	3.0	3.8	12.5	14.0	12.9
17	0	0	0	1.3	1,060	18.3	7.3	3.0	3.2	12.3	14.0	12.9
18	0	0	0	444	538	23.6	7.0	3.0	3.2	12.1	13.3	12.9
19	0	0	0	4,970	150	87.2	7.0	3.0	3.0	11.5	12.9	12.7
20	0	0	6.2	69.2	59.4	55.8	7.0	3.2	2.8	11.3	12.9	12.7
21	0	0	2.5	1,220	32.2	21.5	8.1	3.4	5.0	12.5	12.9	12.9
22	0	0	.4	1,610	22.0	18.6	7.6	3.6	1,610	15.5	12.9	12.9
23	0	0	.2	70.3	16.7	17.0	7.0	3.6	57.0	14.6	13.1	13.3
24	0	0	0	24.6	12.5	16.5	6.7	3.4	19.2	13.3	14.0	15.5
25	0	0	0	10.1	11.0	16.0	6.7	3.4	14.4	12.9	14.0	16.8
26	0	0	0	7.5	77.0	15.0	7.0	3.3	13.3	12.5	14.0	16.5
27	0	0	0	112	158	14.6	7.3	3.2	12.5	12.1	13.7	15.8
28	0	0	0	3,770	37.0	14.4	7.0	3.2	11.5	11.9	13.7	15.5
29	0	0	0	630	22.0	13.5	7.0	3.0	11.1	11.9	13.3	14.8
30	0	0	0	67.4	15.2	13.3	6.7	2.7	10.5	11.9	12.9	14.4
31	0	0	202	6,070	6,070	6.7	2.6			12.1		
Sum	0	0	13,678.2	1,851.0	112.5	1,027.5	421.4					
			211.3	14,815.8	271.5	1,848.1	406.9					

Current Year 1957

Month	Extreme Gage Feet			Extreme Second-Feet		Average Second-Feet	Total Acre-Feet	Acre-Feet				
	High		Low	High				Average	Maximum	Minimum		
	High	Low		Day	Day							
Jan.				0	0	0	0	337	2,110	0		
Feb.				0	0	0	0	507	5,760	0		
Mar.	5.62		31	2,340	† 1	0	6.8	419	2,500	0		
Apr.	10.90		19	16,800	† 8	0	456	27,100	1,505	0		
May	11.30	1.08	16	18,200	11	2.7	478	29,400	2,893	29,400		
June	6.70	1.30	1	4,580	30	12.9	61.7	3,670	4,141	* 56,700		
July	1.30	1.00	1	12.9	31	6.1	8.8	539	2,142	30,000		
Aug.	1.00	.81	1	6.1	† 30	2.6	3.6	223	2,000	48,700		
Sept.	7.37	.81	22	6,210	† 1	2.6	61.6	3,670	1,726	17,300		
Oct.	5.62	1.04	9	2,610	† 7	7.3	33.1	2,040	1,027	8,940		
Nov.	1.40	1.27	† 12	15.0	† 1	12.3	13.6	807	310	2,150		
Dec.	1.49	1.28	† 25	17.2	† 12	12.5	13.6	836	377	2,180		
Yearly	11.30			18,200		0	94.9	68,704	17,384	76,259.3	1,325.2	

* Partly estimated † And other days

RIO SAN DIEGO AT JIMENEZ, COAHUILA

DESCRIPTION: Water-stage recorder and cable with sit-down cable car and masonry and concrete Cipoletti weir control for measuring flows up to 706 second-feet, located 4.4 miles west of Jiménez, Coahuila, and 5.0 miles above the confluence with the Rio Grande. This stream enters the Rio Grande 723.0 river miles below the American Dam at El Paso, Texas. The zero of the gage is 831.52 feet above mean sea level, U.S.C. & G.S. datum.

RECORDS: Based on 10 meter measurements made during the year, the weir discharge table, and a continuous record of gage heights. Records available: 1922 through December 1957. The records from 1922 to September 1932 are considered doubtful.

REMARKS: Reservoirs above and irrigation diversions above and below this station modify the flow of this spring-fed stream. On December 24, 1955, the zero of the gage was raised 2.62 feet to make it coincide with the crest of the weir.

EXTREME FLOWS FROM RECORDS † : Momentary: Max. about 75,200 second-feet on September 18, 1941, with a gage height of 20.96 feet. Min. no flow occurred on several occasions during April, May, and June 1939; May and August 1952; and July and August 1953.

Average Flow in Second-Feet

Daily:	Max. * 23,200	Sept. 18, 1941	Min. 0	Occasionally
Monthly:	Max. 2,380	Oct. 1932	Min. 8.0	July 1956
Yearly:	Max. 527	1935	Min. 24.0	1956

Mean Daily Discharge in Second-Feet 1957 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	24.0	42.0	16.2	24.0	770	667	63.2	9.9	32.8	42.0	42.0	42.0
2	32.8	42.0	24.0	16.2	667	611	52.3	9.9	32.8	42.0	42.0	42.0
3	32.8	32.8	24.0	24.0	586	558	52.3	9.9	24.0	42.0	42.0	42.0
4	32.8	24.0	24.0	24.0	509	533	52.3	9.9	32.8	42.0	42.0	42.0
5	24.0	9.9	24.0	24.0	459	509	52.3	16.2	42.0	42.0	42.0	42.0
6	24.0	9.9	16.2	16.2	413	484	52.3	16.2	42.0	42.0	42.0	42.0
7	24.0	9.9	16.2	16.2	367	459	52.3	16.2	42.0	42.0	42.0	42.0
8	24.0	9.9	24.0	16.2	346	434	52.3	16.2	42.0	42.0	42.0	42.0
9	24.0	16.2	24.0	16.2	325	413	52.3	16.2	42.0	667	42.0	42.0
10	24.0	9.9	24.0	16.2	284	413	52.3	16.2	32.8	143	42.0	42.0
11	24.0	16.2	24.0	16.2	667	388	52.3	16.2	32.8	87.2	42.0	42.0
12	24.0	9.9	32.8	88.3	1,710	325	42.0	24.0	32.8	63.2	42.0	42.0
13	24.0	9.9	24.0	42.0	2,920	325	42.0	24.0	32.8	63.2	42.0	32.8
14	24.0	9.9	24.0	42.0	770	284	42.0	24.0	24.0	63.2	42.0	32.8
15	24.0	9.9	32.8	32.8	459	265	42.0	24.0	32.8	63.2	42.0	32.8
16	32.8	16.2	32.8	32.8	1,640	245	32.8	24.0	24.0	63.2	42.0	32.8
17	32.8	16.2	24.0	42.0	1,720	245	32.8	16.2	32.8	52.3	42.0	32.8
18	32.8	24.0	24.0	314	5,610	271	42.0	24.0	32.8	52.3	42.0	32.8
19	32.8	24.0	16.2	936	904	291	42.0	24.0	32.8	52.3	32.8	32.8
20	24.0	24.0	16.2	87.2	667	209	42.0	24.0	24.0	52.3	32.8	32.8
21	32.8	24.0	24.0	1,120	586	175	42.0	24.0	52.3	52.3	32.8	32.8
22	32.8	24.0	24.0	805	533	114	42.0	24.0	452	52.3	32.8	32.8
23	32.8	24.0	24.0	114	484	100	32.8	24.0	143	52.3	42.0	32.8
24	32.8	24.0	16.2	63.2	459	100	32.8	24.0	87.2	52.3	42.0	42.0
25	32.8	24.0	16.2	209	434	87.2	32.8	24.0	63.2	42.0	42.0	42.0
26	32.8	16.2	16.2	3,670	434	114	32.8	24.0	63.2	42.0	32.8	42.0
27	32.8	16.2	16.2	886	4,700	114	24.0	24.0	63.2	42.0	32.8	32.8
28	42.0	16.2	16.2	7,910	1,140	87.2	24.0	24.0	63.2	42.0	32.8	32.8
29	42.0	16.2	16.2	2,750	904	63.2	24.0	24.0	63.2	52.3	32.9	32.8
30	42.0	16.2	16.2	950	791	63.2	24.0	24.0	52.3	52.3	32.8	42.0
31	42.0	24.0	16.2	766			16.2	24.0	52.3			
Sum		535.3	20,303.7	33,024	8,946.8	625.2	2,292.5		1,182.4			
939.2		676.8			1,273.2	1,769.6	1,177.3					
Current Year 1957										Period Oct. 1932-1957		
Month	Extreme Gage		Extreme Second-Feet		Average Second-Feet	Total	Acre-Feet					
	High	Low	Day	Day			Acres	Average	Maximum	Minimum		
Jan.	.20	.13	† 28	42.0	† 1	24.0	30.3	1,860	6,494	36,430	1,860	
Feb.	.20	.07	† 1	42.0	† 5	9.9	19.1	1,060	5,152	25,760	1,060	
Mar.	.20	.07	† 12	42.0	26	9.9	21.8	1,340	4,950	27,040	1,340	
Apr.	9.02	.10	28	18,790	† 1	16.2	677	40,270	6,566	40,270	1,110	
May	7.97	.72	16	14,480	† 10	284	1,070	65,500	* 14,809	120,200	861	
June	1.31	.26	19	724	† 29	63.2	298	17,750	10,105	62,240	543	
July	.26	.07	1	63.2	31	9.9	41.1	2,530	8,314	34,430	490	
Aug.	.16	.07	31	32.8	† 1	9.9	20.2	1,240	7,190	32,180	738	
Sept.	1.90	.13	22	1,170	† 3	24.0	59.0	3,510	* 13,189	84,620	1,230	
Oct.	3.28	.20	9	2,900	† 1	42.0	74.0	4,550	16,668	146,640	1,720	
Nov.	.23	.16	1	52.3	† 18	32.8	39.2	2,340	10,265	68,290	803	
Dec.	.20	.13	† 1	42.0	19	24.0	38.1	2,350	6,980	45,160	1,130	
Yearly	9.02	.07		18,790		9.9	199	144,300	110,682	* 381,720	17,430	

* Partly estimated † And other days ‡ Period 1932-1957

RIO SAN RODRIGO NEAR EL MORAL, COAHUILA

DESCRIPTION: Water-stage recorder and cable with sit-down cable car and reinforced concrete control weir for measuring flows up to 177 second-feet. This station is located 10.6 miles west of the town of El Moral, Coahuila, 19.3 miles northwest from Piedras Negras, Coahuila, and 11.2 river miles above the confluence with the Rio Grande. The stream enters the Rio Grande 736.2 river miles below the American Dam at El Paso, Texas. The zero of the gage is 879.95 feet above mean sea level, U.S.C. & G.S. datum.

RECORDS: Based on 2 meter measurements during the year, the weir discharge table, and a continuous record of gage heights. Records available: 1922 through December 1957. The records from 1922 to 1931 are considered doubtful.

REMARKS: The flow of this spring-fed stream is modified by irrigation diversions above and below this station.

EXTREME FLOWS FROM RECORDS † : Momentary: Max. * 81,200 second-feet on September 7, 1932, with a gage height of 16.08 feet on the original gage (See Water Bulletin No. 16.) Min. frequently no flow, which occurs at zero gage height.

Average Flow in Second-Feet

Daily:	Max. * 27,900	Sept. 7, 1932	Mtn. 0	Frequently
Monthly:	Max. 4,270	Sept. 1932	Min. 0	Frequently
Yearly:	Max. 576	1932	Min. 3.2	1956

Mean Daily Discharge in Second-Feet 1957 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0	0	0	0	122	132	12.0	0	0	0	5.0	4.9
2	0	0	0	0	87.6	113	12.0	0	0	0	5.0	4.9
3	0	0	0	0	71.7	96.1	8.2	0	0	0	5.0	4.9
4	0	0	6.7	0	43.8	87.6	8.2	0	0	0	5.0	4.9
5	0	0	31.4	0	31.4	79.5	8.2	0	0	0	5.0	4.9
6	0	0	21.2	0	26.1	71.7	8.2	0	0	0	8.1	8.1
7	0	0	12.0	0	26.1	71.7	5.0	0	0	0	5.0	4.9
8	0	0	12.0	0	21.2	64.3	5.0	0	0	0	5.0	5.0
9	0	0	12.0	0	16.2	64.3	4.9	0	0	2.8	5.0	5.0
10	0	0	12.0	0	12.0	71.7	4.9	0	0	0	8.1	5.0
11	0	0	8.1	0	1,900	105	4.9	0	0	0	12.0	5.0
12	0	0	8.2	0	671	71.7	4.9	0	0	0	12.0	5.0
13	0	0	8.2	0	307	57.2	2.1	0	0	0	12.0	5.0
14	0	0	8.2	0	96.1	43.8	2.1	0	0	0	8.1	5.0
15	0	0	8.1	0	50.1	43.8	2.1	0	0	0	8.1	5.0
16	0	0	8.1	0	47.3	37.4	2.1	0	0	0	8.1	5.0
17	0	0	12.0	0	463	31.4	2.1	0	0	0	8.1	5.0
18	0	0	8.1	195	1,440	31.4	2.1	0	0	0	5.0	5.0
19	0	0	8.1	1,210	241	31.4	2.1	0	0	0	5.0	4.9
20	0	0	8.1	104	123	31.4	2.1	0	0	0	4.9	4.9
21	0	0	8.1	66.0	87.6	31.4	2.1	0	0	0	8.1	4.9
22	0	0	8.1	657	64.3	26.1	2.1	0	0	2.1	8.1	4.9
23	0	0	5.0	104	57.2	21.2	2.1	0	0	8.1	8.1	4.9
24	0	0	5.0	57.2	50.1	21.2	2.1	0	0	8.1	8.1	8.1
25	0	0	2.1	1,060	43.8	21.2	2.1	0	0	8.1	8.1	8.1
26	0	0	2.1	2,400	2,540	16.2	2.1	0	0	8.1	8.1	8.1
27	0	0	2.1	572	4,060	16.2	2.1	0	0	4.9	8.1	8.1
28	0	0	2.1	1,230	618	12.0	2.1	0	0	4.9	8.1	8.1
29	0	0	2.1	522	307	12.0	2.1	0	0	4.9	4.9	8.1
30	0	0	184	206	12.0	2.1	0	0	0	4.9	4.9	8.1
31	0	0	0	162	2.1	0	0	0	0	4.9	8.1	8.1
Sum	0	0	229.2	8,361.2	13,992.6	1,525.9	126.3	0	0	61.8	214.1	181.8

Current Year 1957

Period 1932-1957

Month	Extreme Gage Feet		Extreme Second-Feet		Average Second-Feet	Total Acre-Feet	Acre-Feet		
	High	Low	Day	Day			Average	Maximum	Minimum
Jan.				0	0	0	2,952	14,850	0
Feb.				0	0	0	2,377	11,580	0
Mar.	.26		† 4	31.4	† 1	0	7.4	2,153	9,900
Apr.	9.51		† 25	8,580	† 1	0	279	16,580	3,028
May	10.47	'3	27	9,994	† 10	12.0	451	27,750	21,160
June	.72	.13	† 1	142	† 27	12.0	50.9	3,030	42,330
July	.13	.03	† 1	12.0	† 12	2.1	4.1	5,582	41,660
Aug.				0	0	0	0	3,334	12,170
Sept.				0	0	0	0	4,012	23,580
Oct.	.33		9	43.8	† 1	0	2.0	123	16,898 *
Nov.	.13	.07	† 11	12.0	† 1	4.9	7.1	8,188	253,960
Dec.	.10	.03	† 1	8.1	† 14	2.1	5.9	425	81,360
Yearly				9,994		0	67.6	48,975	4,273
									2,309

* Partly estimated † And other days ‡ Period 1932-1957

WATER BULLETIN NUMBER 27 -- INTERNATIONAL BOUNDARY AND WATER COMMISSION

**RETURN FLOW TO THE RIO GRANDE AT MAVERICK POWER PLANT
NEAR EAGLE PASS, TEXAS**

DESCRIPTION: A part of the water diverted from the river into the Maverick Canal is returned to the Rio Grande through the hydroelectric power plant near Eagle Pass, Texas, at a point about 32.2 canal miles below the point of diversion, and about 746.7 river miles below the American Dam at El Paso, Texas.

RECORDS: Based on records furnished by the Maverick County Water Control and Improvement District No. 1, showing hourly manometer readings of discharge, in cubic feet per second, through each turbine at the Central Power and Light Company hydroelectric power plant. The mean daily discharges computed from the manometer readings have been multiplied by a factor to make them agree with periodic current meter measurements of flow made under stable flow conditions by hydrographers of this Commission. Records available: January 1949 through December 1957.

REMARKS: This power plant began operating April 16, 1932, with hydroelectric power generating facilities for 12,000 kw. Because the September 1932 flood washed out the upper end of the Maverick Canal, this plant did not operate from September 2, 1932 until March 17, 1937. Since then, however, it has operated continuously except for 44 days in 1953 when shortage of water prevented operation, and from June 30 to July 20, during the flood of 1954, and while the canal was being repaired.

Average Flow in Second-Feet

Daily:	Max. 1,390	May 27, 1951	Min. 0	Frequently 1953 & 1954
Monthly:	Max. 1,160	June 1950	Min. 14.1	June 1953
Yearly:	Max. 1,020	1950	Min. 443	1953 & 1956

Mean Daily Discharge in Second-Feet 1957 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	614	688	855	579	827	952	556	439	621	973	980	943
2	604	691	818	474	831	923	561	430	581	956	968	947
3	610	703	819	445	856	896	541	469	585	939	968	956
4	618	714	882	355	832	970	492	514	615	899	969	924
5	631	690	918	393	833	958	504	489	626	860	1,010	908
6	665	674	855	352	840	948	481	493	715	815	1,010	911
7	655	659	814	353	831	892	474	492	676	769	1,000	928
8	665	640	820	368	827	848	485	486	689	697	975	930
9	670	639	823	338	834	846	407	473	673	961	963	927
10	666	633	800	316	812	858	380	478	662	1,130	968	952
11	665	653	798	259	821	850	407	459	664	1,100	1,070	912
12	680	182	796	263	849	844	402	490	674	1,060	1,110	903
13	679	0	768	562	794	810	403	549	678	1,130	1,100	862
14	671	0	752	650	615	815	460	574	721	1,140	1,080	851
15	669	446	711	588	650	786	423	576	694	1,060	1,090	866
16	666	637	664	555	687	804	422	572	663	1,000	1,080	871
17	631	712	634	521	738	723	409	603	630	988	1,080	891
18	629	784	589	472	813	704	393	652	618	999	1,090	868
19	609	835	568	655	759	688	438	609	656	983	1,020	867
20	621	856	553	868	775	692	435	613	643	1,000	948	883
21	642	857	668	880	807	699	484	631	642	1,030	924	882
22	639	857	752	823	708	708	443	636	841	1,100	930	906
23	645	891	656	903	716	703	424	641	951	1,090	947	920
24	655	893	560	885	730	702	425	669	1,020	1,110	943	992
25	652	886	541	676	775	639	437	707	1,060	1,180	949	1,060
26	657	896	474	422	792	613	467	692	1,050	1,230	972	1,050
27	676	903	455	728	882	562	487	679	1,060	1,140	950	1,090
28	702	907	462	829	906	562	507	673	1,000	1,050	945	1,080
29	719		435	855	786	578	470	616	990	1,030	946	1,080
30	714		387	845	921	600	457	595	966	1,030	946	1,080
31	683		488		919		453	623		998		1,030
Sum	18,926	17,212	24,766	23,173		17,622		22,664	31,447	29,931		29,270
	20,302	21,115		14,127								

Current Year 1957							Period 1949-1957					
Month	Extreme Gage Feet		Ø Extreme Second-Feet		Average Second-Feet	Total Acre-Feet	Acre-Feet					
	High	Low	Day	High	Low		Average	Maximum	Minimum			
Jan.				29	719	2	604	655	40,300	47,322	64,700	34,400
Feb.				28	907	113	0	676	37,500	40,878	57,200	24,900
Mar.				5	918	30	387	681	41,900	40,456	65,400	18,900
Apr.				23	903	11	259	574	34,100	33,831	58,600	6,080
May				30	921	14	615	799	49,100	41,953	64,900	2,280
June				4	970	27	562	772	46,000	40,905	68,900	841
July				2	561	10	380	456	28,000	35,843	63,000	2,880
Aug.				25	707	2	430	568	35,000	44,622	68,900	22,600
Sept.				125	1,060	2	581	755	45,000	48,533	67,500	18,500
Oct.				26	1,230	8	697	1,010	62,400	48,022	69,000	23,000
Nov.				12	1,110	21	924	998	59,400	45,000	63,500	27,300
Dec.				27	1,090	14	851	944	58,100	47,900	65,500	34,300
Yearly					1,230		0	741	536,800	515,265	740,000	320,701

† And other days Ø Mean daily

RIO GRANDE AT EAGLE PASS, TEXAS

DESCRIPTION: Water-stage recorder and cable with stand-up cable car and winch, located .5 mile above the international highway bridge between Eagle Pass, Texas and Piedras Negras, Coahuila, and 756.4 river miles below the American Dam at El Paso, Texas. The zero of the gage is 682.91 feet above mean sea level, U.S.C. & G.S. datum.

RECORDS: Based on 152 meter measurements during the year, 148 by the Mexican and 4 by the United States Section of this Commission, and a continuous record of gage heights. Computations by shifting channel methods. Records available: May 1900 to March 1914; August 1914 to April 1916; September 1916; September and October 1917; October 1918; September and October 1919; August and September 1920; June 1922; September, November, and December 1923; and January 1924 through December 1957.

REMARKS: Reservoirs, diversions, and drainage returns modify the river flow at this station.

EXTREME FLOWS FROM RECORDS: The greatest recorded flow was ** 964,100 second-feet, which occurred June 29, 1954, with a gage height of 53.51 feet. Well-authenticated information indicates the occurrence of a flood in June 1865 with an estimated discharge of 1,236,000 second-feet and a gage height of 56.00 feet on the present gage. The lowest recorded flow was 24.4 second-feet, which occurred June 22, 1953, with a gage height of .07 foot.

Average Flow in Second-Feet †

Daily:	Max. 572,100	June 28, 1954	Min. 30.7	June 22, 1953
Monthly:	Max. 48,000	Sept. 1932	Min. 248	Apr. 1953
Yearly:	Max. 9,180	1932	Min. 870	1956

Mean Daily Discharge in Second-Feet 1957 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	848	1,080	1,200	2,020	11,020	33,090	2,050	1,670	1,380	1,720	2,420	1,730
2	812	1,090	1,100	819	6,180	33,440	1,780	1,420	1,310	1,620	2,260	1,670
3	812	1,090	1,410	667	4,480	10,880	1,660	1,240	1,250	1,570	2,210	1,730
4	812	1,040	1,290	547	3,880	7,060	1,480	1,420	1,280	1,500	2,480	1,730
5	812	1,040	1,200	547	3,390	5,190	1,370	1,470	1,310	1,440	3,810	1,670
6	883	999	1,130	498	3,250	5,190	1,220	1,110	2,470	1,410	3,270	1,610
7	848	961	1,100	498	3,260	4,980	1,170	1,110	1,830	1,340	2,530	1,730
8	922	961	1,030	523	2,920	5,190	1,270	1,030	1,440	1,310	2,210	1,780
9	961	922	1,030	498	2,340	4,240	1,220	1,030	1,340	5,830	2,160	1,780
10	961	922	992	448	2,460	3,320	1,110	1,030	1,340	4,840	2,110	1,730
11	922	961	992	385	13,310	2,970	1,090	982	1,310	2,860	2,160	1,670
12	883	1,560	1,170	406	50,850	3,250	1,020	950	1,340	2,110	2,160	1,670
13	883	1,530	1,030	6,530	31,220	2,900	1,020	1,280	1,410	2,920	2,110	1,540
14	882	1,310	957	3,810	46,620	2,740	1,040	1,290	2,340	3,710	2,110	1,610
15	848	1,130	893	2,280	47,670	3,320	1,040	1,200	1,540	4,030	2,010	1,670
16	883	922	826	1,490	13,240	2,970	996	1,330	1,410	11,270	1,970	1,670
17	883	999	795	1,040	27,020	2,640	950	1,330	1,340	12,290	1,960	1,540
18	882	1,040	763	1,290	37,790	2,490	883	1,330	1,310	5,370	1,910	1,540
19	847	1,090	646	17,230	34,110	3,040	861	1,420	1,250	3,600	1,870	1,470
20	812	1,610	699	5,790	32,630	3,040	861	1,570	1,220	3,810	1,780	1,470
21	847	1,560	1,020	2,770	13,000	2,580	928	1,780	1,180	2,990	1,780	1,410
22	847	1,540	1,630	14,970	6,140	2,490	950	1,890	5,860	3,210	1,780	1,540
23	847	3,150	1,240	3,230	4,480	3,850	883	1,670	3,740	2,470	1,780	1,540
24	882	3,030	862	2,760	3,880	2,900	883	1,980	2,660	2,610	1,730	2,010
25	883	2,280	763	2,040	3,330	2,550	1,360	2,930	2,600	6,570	1,730	1,870
26	883	1,960	600	28,360	3,460	2,390	2,120	2,470	2,930	5,830	1,780	1,830
27	922	1,560	600	15,640	26,060	2,270	1,480	2,000	2,790	4,660	1,730	1,730
28	999	1,310	600	17,480	48,030	2,210	1,170	1,620	2,220	3,600	1,730	1,780
29	1,130			505	49,440	48,380	2,150	1,170	1,370	2,000	3,070	1,730
30	1,130			470	25,000	11,580	2,150	1,260	1,290	1,830	2,730	1,730
31	1,090			735	12,820		1,660	1,290		2,530		1,670
Sum	38,647		209,006		167,480			45,502		114,820		51,790
	27,856		29,278		558,800			37,955		57,230		63,000

Current Year 1957 Period 1924-1957

Month	Extreme Gage Feet			Extreme Second-Feet		Average Second-Feet	Total	Acre-Feet		
	High	Low	Day	Day	Low			Average	Maximum	Minimum
Jan.	2.33	1.97	129	1,170	3	742	55,250	153,088	365,000	42,690
Feb.	3.84	2.07	23	3,810	16	848	1,380	76,660	137,383	398,200
Mar.	3.87	1.64	31	3,880	130	434	944	58,070	127,809	247,440
Apr.	17.06	1.35	29	54,700	11	343	6,970	414,600	132,986	414,600
May	20.64	2.92	29	75,600	9	2,170	18,030	1,108,000	236,667	1,108,000
June	15.06	2.72	2	44,500	30	2,120	5,580	332,200	315,081	2,794,000
July	3.12	1.54	25	2,490	18	795	1,220	75,280	245,901	* 1,255,000
Aug.	3.08	1.74	25	3,140	11	908	1,470	90,250	250,488	* 947,000
Sept.	5.68	1.80	22	8,690	120	1,150	1,910	113,500	478,747	3,079,000
Oct.	7.97	1.90	17	15,400	8	1,250	3,700	227,700	366,115	1,680,300
Nov.	3.61	2.23	4	4,170	121	1,670	2,100	125,000	176,240	512,800
Dec.	2.62	2.07	24	2,260	1,340	1,670	102,700	152,799	369,760	41,000
Yearly	20.64	1.35		75,600		343	3,840	2,779,210	2,773,304	6,946,510
										631,520

* Partly estimated † And other days ** Determined by slope-area calculations. † Period 1924-1957

RIO ESCONDIDO AT VILLA DE FUENTE, COAHUILA

DESCRIPTION: Water-stage recorder and reinforced concrete weir for measuring flows up to 45.9 second-feet, located immediately below the highway bridge over Rio Escondido on the outskirts of Villa de Fuente, 3.1 miles southwest of Piedras Negras, Coahuila, and 3.7 miles above the confluence with the Rio Grande. The cable and cable car are located 1.2 miles upstream at the previous station site. This stream enters the Rio Grande 760.0 river miles below the American Dam at El Paso, Texas. The zero of the gage is 708.78 feet above mean sea level, U.S.C. & G.S. datum.

RECORDS: Based on 47 meter measurements during the year, the weir discharge table, and a continuous record of gage heights. Computations by shifting channel methods for flows greater than 45.9 second-feet. Records available: 1922 through December 1957. Records from 1922 to September 1932 are considered doubtful.

REMARKS: Diversions and drainage returns modify the flow of this spring-fed stream at this station. Backwater from the Rio Grande reached an elevation of 729.92 feet during the flood of June 1954.

EXTREME FLOWS FROM RECORDS ‡ : Momentary: Max. 24,000 second-feet on June 29, 1936, with a gage height of 19.13 feet. Min. frequently no flow.

Average Flow in Second-Feet

Daily:	Max. 7,700	May 27, 1957	Min. 0	Several days 1956 & 1957
Monthly:	Max. 647	Oct. 1932	Min. .6	Aug. & Sept. 1957
Yearly:	Max. 83.2	1935	Min. 2.4	1956

Mean Daily Discharge in Second-Feet 1957 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.8	.7	.7	1.4	40.6	51.2	4.9	1.4	0	0	1.4	1.4
2	.7	.7	.7	1.4	37.1	43.1	4.3	1.4	0	0	1.4	1.5
3	.7	.7	125	1.4	30.0	35.3	4.3	1.4	0	0	1.4	1.5
4	.7	.7	27.6	1.4	19.8	32.5	3.6	1.4	0	0	1.4	1.4
5	.7	.7	7.8	1.4	14.1	29.3	2.8	1.4	0	0	1.4	1.4
6	.7	.7	4.2	1.4	14.1	29.3	2.1	1.4	0	0	1.4	1.4
7	.7	.7	4.2	1.4	12.0	29.3	1.8	1.1	0	0	1.4	1.4
8	.7	.7	2.8	1.4	9.9	29.3	1.8	1.1	0	0	1.4	1.4
9	.7	.7	2.8	.7	9.9	23.7	2.8	1.0	0	196	1.4	1.4
10	.7	.7	2.8	.7	9.9	23.7	2.8	1.1	0	21.9	1.4	1.4
11	.7	.7	2.9	.7	8.1	19.1	2.1	.7	0	1.4	1.4	1.4
12	.7	.7	4.2	1.4	6.4	51.2	1.8	.7	0	1.4	1.4	1.4
13	.7	.7	2.8	1.4	6.4	32.5	1.8	.7	0	1.4	1.4	1.4
14	.7	.7	1.5	1.4	6.4	14.8	2.8	.7	0	1.4	1.4	1.4
15	.8	.7	1.4	1.4	6.4	9.9	2.8	.7	0	1.4	1.4	1.4
16	.7	.7	1.4	.7	6.4	8.5	2.8	.4	0	.7	1.4	1.4
17	.7	.7	1.4	295	19.8	6.0	1.4	.3	0	.7	1.4	1.4
18	.7	.7	1.4	21.5	19.8	6.0	1.4	.3	0	.7	.7	1.4
19	.7	.7	1.4	.7	14.1	6.0	1.4	.4	0	.7	.8	.7
20	.7	.7	1.4	3,240	14.1	19.1	1.4	0	0	1.4	.8	.7
21	.8	.7	1.4	1,560	12.0	6.0	1.4	0	0	38.1	.7	.7
22	.7	.7	1.4	156	8.1	8.5	2.8	0	16.5	174	.7	1.4
23	.7	.7	7	63.2	6.4	8.5	2.8	0	.7	12.0	.7	1.4
24	.7	.7	1.4	352	4.9	8.5	1.4	0	0	1.4	.7	7.8
25	.7	.7	1.4	1,940	4.9	8.5	.7	0	0	1.4	.7	1.4
26	.7	.7	1.4	278	2,500	6.0	0	0	0	.7	.7	1.4
27	.8	.7	1.4	1,470	7,700	6.0	0	0	0	.7	.7	1.4
28	.7	.7	1.4	1,460	1,890	4.9	0	0	0	.7	.7	1.4
29	.7	.7	1.4	142	235	4.2	1.4	0	0	.7	.7	1.4
30	.7	.7	1.4	67.1	104	4.2	4.2	0	0	.7	.7	1.4
31	.7	.7	1.4	69.6	104	2.8	0	0	0	.7	.7	1.4
Sum		19.6		11,065.1	565.1		17.6		460.2	47.2		
	22.1	213.1		12,840.2	68.4		17.2		33.1			

Current Year 1957

Month	Extreme Gage Feet			Extreme Second-Feet		Average Second-Feet	Total	Acre-Feet		
	High	Low	Day	High	Low			Average	Maximum	Minimum
	High	Low	Day	Day	Day					
Jan.	.03	0	† 1	.8	† 10	0	.7	43.8	1,996	15,990
Feb.	.07	0	17	1.4	126	0	.7	38.9	1,349	9,990
Mar.	2.49	.03	3	650	† 1	.7	6.9	423	1,184	6,910
Apr.	13.12	0	20	12,890	19	0	369	21,950	2,282	21,950
May	15.81	.36	27	18,220	124	4.9	414	25,470	4,747	25,470
June	1.77	.46	12	184	† 28	4.2	18.8	1,120	2,491	19,730
July	.49	0	1	4.9	† 26	0	2.2	136	1,931	9,740
Aug.	.03	0	† 1	1.4	120	0	.6	34.9	* 2,114	20,830
Sept.	2.33	0	22	501	† 1	0	.6	34.1	2,861	21,590
Oct.	2.62	0	22	622	† 1	0	14.8	912	2,848	39,790
Nov.	.07	.03	† 1	1.4	† 18	.7	1.1	65.7	1,789	25,590
Dec.	.46	.03	24	27.5	† 19	.7	1.5	94.0	1,832	20,720
Yearly	15.81	0		18,220	0	69.5	50,322.4	27,424	60,241	1,755.3

* Partly estimated † And other days ‡ Period October 1932-1957

**RIO GRANDE AT SAN ANTONIO CROSSING
NEAR VILLA GUERRERO, COAHUILA**

DESCRIPTION: Bubbler-type water-stage recorder, operated with bottled nitrogen gas, located on high ground about 1,000 feet from the river at San Antonio Crossing, .5 mile below Cuervo Creek which marks the lower end of the Maverick Irrigation District, 35.5 river miles below Eagle Pass, Texas and Piedras Negras, Coahuila, 5 miles northeast of Villa Guerrero, Coahuila, and 792.4 river miles below the American Dam at El Paso, Texas. The zero of the gage is 581.61 feet above mean sea level, U.S.C. & G.S. datum.

RECORDS: Based on 22 meter measurements by wading during the year and a continuous record of gage heights. Computations for discharges up to 1,200 second-feet are based on a relatively stable rating curve defined by meter measurements. Computations for higher discharges are based on an extension of the curve. Records available: March, April, May, October, November, and December 1952, with some days missing; January 1 through August 20, 1953; September 23, 1953 through June 14, 1954; and May 27, 1955 through December 1957, with some days missing.

REMARKS: The June 1954 flood reached an elevation of 624.31 feet at this station, with a discharge of 912,000 second-feet, determined by slope-area computations.

Mean Daily Discharge in Second-Feet 1957 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	988	1,160	1,400	1,690	11,300	24,900	1,690	1,880	1,480	1,740	2,390	1,730
2	998	1,140	1,230	1,360	6,330	34,700	1,630	1,680	1,450	1,730	2,280	1,670
3	978	1,150	1,470	909	4,400	11,200	1,650	1,510	1,380	1,640	2,130	1,640
4	978	1,140	2,400	786	3,840	6,780	1,580	1,500	1,350	1,590	2,200	1,670
5	968	1,130	1,400	669	3,450	* 5,140	1,500	1,710	1,390	1,500	3,350	1,670
6	988	1,080	1,330	669	2,930	4,400	1,460	1,500	1,740	1,490	3,490	1,610
7	1,030	1,050	1,260	648	2,520	3,930	1,390	1,310	2,710	* 1,440	2,770	1,640
8	1,030	1,030	1,230	635	2,650	3,610	1,390	1,300	1,790	* 1,700	2,310	1,670
9	1,070	998	1,170	622	2,480	3,380	1,360	1,220	1,550	* 3,780	2,100	1,700
10	1,100	958	1,150	578	2,480	3,110	1,250	1,220	1,470	* 5,950	2,080	1,700
11	1,120	958	1,120	572	4,300	2,850	1,230	1,270	1,440	3,100	2,100	1,670
12	1,080	1,100	1,250	519	40,800	* 3,020	1,200	1,210	1,360	2,120	2,120	1,660
13	1,070	1,480	1,370	2,880	34,500	3,420	1,160	1,270	1,440	1,690	* 2,080	1,600
14	1,040	1,320	1,150	5,510	35,500	2,910	1,170	1,490	1,950	3,450	* 1,980	1,550
15	998	1,130	1,120	2,890	56,300	2,870	1,220	1,450	2,000	2,730	* 1,880	1,600
16	988	1,020	968	1,760	15,200	3,500	1,170	1,450	1,530	7,510	1,850	1,600
17	1,040	998	909	1,230	26,700	2,800	1,150	1,490	1,470	10,700	1,820	1,610
18	1,040	1,160	881	1,070	31,500	2,380	1,100	1,480	1,390	5,920	1,790	1,570
19	1,030	1,200	827	16,000	27,000	2,740	1,060	1,470	1,340	3,540	1,770	1,570
20	988	1,270	802	9,690	31,400	3,400	1,080	1,610	1,290	3,150	1,720	1,590
21	958	1,580	853	3,850	12,500	2,780	1,090	1,720	1,260	3,530	1,640	1,570
22	978	1,480	1,360	18,000	6,380	2,340	1,160	1,790	6,040	5,480	1,640	1,560
23	958	2,010	1,520	6,420	4,460	3,280	1,120	1,760	5,210	3,010	1,700	1,630
24	978	3,450	1,130	3,000	3,930	3,460	1,040	1,670	3,260	2,330	1,740	2,310
25	998	2,600	927	2,150	3,630	2,780	1,070	2,470	2,450	* 5,080	1,720	2,000
26	1,010	1,980	881	* 21,000	4,960	2,270	2,320	2,550	2,550	5,040	1,730	1,790
27	1,010	1,720	769	19,200	30,500	2,200	1,980	2,310	2,730	* 3,990	1,730	1,670
28	1,040	1,520	746	15,300	39,200	1,960	1,550	1,880	2,350	* 3,560	1,700	1,640
29	1,080		753	* 47,300	60,100	1,790	1,490	1,660	1,950	* 3,150	1,690	1,640
30	1,160		725	* 31,300	12,600	1,760	1,490	1,500	1,850	* 2,770	1,690	1,630
31	1,160		739		7,500			1,560	1,440	2,510		1,630
Sum	31,852	38,812	*218,207		155,660		49,770		*106,920		51,790	
	34,840	531,340			42,310			61,170		61,190		

Current Year 1957 Period #1952-1957

Month	Extreme Gage Feet			Extreme Second-Feet		Average Second-Feet	Total	Acre-Feet			
	High	Low	Day	High	Low			Average	Maximum	Minimum	
Jan.	1.74	1.50	30	1,190	23	927	1,030	63,200	64,758	81,600	53,730
Feb.	3.15	1.49	24	3,790	10	918	1,390	77,000	60,542	77,000	43,270
Mar.	3.05	1.21	4	3,560	30	689	1,120	69,100	56,000	69,100	38,100
Apr.	* 10.75	.92	29	* 53,500	12	507	* 7,270	* 433,000	178,392	* 433,000	26,970
May	12.67	2.34	29	73,500	11	2,060	17,200	1,054,000	338,160	1,054,000	18,140
June	9.33	2.07	2	41,000	30	1,760	5,190	309,000	116,140	309,000	8,260
July	2.75	1.46	26	3,010	24	1,010	1,360	83,900	78,858	* 176,000	27,400
Aug.	2.76	1.62	25	3,020	12	1,160	1,610	98,700	71,450	98,700	44,200
Sept.	4.58	1.67	22	8,330	21	1,210	2,040	121,000	190,400	369,000	81,200
Oct.	5.45		17	12,300	7	* 0,1440	3,450	212,000	162,555	226,000	71,220
Nov.	3.21	1.99	5	4,040	* 21	1,610	2,040	121,000	74,818	121,000	43,970
Dec.	2.76	1.92	24	3,020	14	1,520	1,670	103,000	71,976	103,000	53,190
Yearly	12.67	.92		73,500	507	3,790	2,744,900	1,464,049	2,744,900	756,800	

^u Estimated * Partly estimated † And other days 0 Mean daily # Some months missing

WATER BULLETIN NUMBER 27 — INTERNATIONAL BOUNDARY AND WATER COMMISSION

RIO GRANDE AT LAREDO, TEXAS

DESCRIPTION: Bubbler-type water-stage recorder operated with bottled nitrogen gas and cable with stand-up cable car, located .9 mile downstream from the highway bridge between Laredo, Texas and Nuevo Laredo, Tamaulipas, and 890.8 river miles below the American Dam at El Paso, Texas. The zero of the gage is 347.90 feet above mean sea level, U.S.C. & G.S. datum.

RECORDS: Based on 208 meter measurements during the year, 183 by the Mexican and 25 by the United States Section of this Commission, and a continuous record of gage heights. Computations by shifting channel methods. Records available: May 1900 through December 1913; May, June, and October 1914; September 1916; September and October 1917; October 1918; September and October 1919; August and September 1920; June, November, and December 1922; and January 1923 through December 1957. Gage-height records are available for January, February, and March 1914.

REMARKS: Reservoirs, diversions, and drainage returns modify the river flow at this station. This station was established in January 1955 to replace the station 1.5 miles upstream which was destroyed by the June-July 1954 flood.

EXTREME FLOWS FROM RECORDS: The greatest recorded flow was ** 716,900 second-feet, with a gage height of 61.35 feet, which occurred June 30, 1954. Much well-authenticated information indicates the occurrence of a greater flood in June 1865, with a gage height of 62.5 feet on the same gage, and a discharge of approximately 950,000 second-feet. The lowest recorded flow was zero, which occurred various days in June and July 1953 and on July 24, 1956.

Average Flow in Second-Feet \$

Daily:	Max. 576,000	June 30, 1954	Min. 0	Several days June & July 1953
Monthly:	Max. 52,300	Sept. 1932	Min. 5.5	June 1953
Yearly:	Max. 10,100	1932	Min. 1,080	1956

Mean Daily Discharge in Second-Feet 1957 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1,050	1,110	1,590	632	34,430	10,950	1,610	1,360	1,430	2,190	2,780	1,740
2	1,040	1,120	1,390	639	13,170	30,230	1,610	1,480	1,310	2,000	2,610	1,740
3	1,020	1,090	1,240	1,750	7,310	36,020	1,510	1,550	1,360	1,800	2,520	1,740
4	1,010	1,050	1,170	1,110	5,160	13,420	1,510	1,430	1,250	1,680	2,380	1,680
5	982	1,090	2,140	766	4,340	8,090	1,410	1,400	1,200	1,620	2,300	1,740
6	981	1,010	1,630	632	3,880	6,500	1,370	1,410	1,130	1,490	2,910	1,740
7	1,020	989	1,290	533	3,430	5,370	1,320	1,460	1,130	1,430	3,570	1,740
8	1,040	897	1,170	533	3,200	4,630	1,270	1,360	1,990	1,370	3,080	1,740
9	1,080	833	1,110	533	3,000	4,340	1,230	1,200	1,830	1,910	2,610	1,740
10	1,040	777	1,080	463	5,300	3,960	1,130	1,480	1,370	2,520	1,740	
11	1,080	777	1,050	463	3,370	3,670	1,070	1,130	1,350	6,920	3,000	1,740
12	1,080	745	1,050	463	7,350	3,470	964	1,080	1,310	3,880	2,610	1,740
13	1,080	745	992	413	40,260	3,430	908	1,080	1,310	2,910	2,440	1,680
14	1,080	957	1,240	742	38,140	3,530	908	1,020	1,260	2,300	2,350	1,680
15	1,080	1,330	1,240	6,000	38,850	3,100	908	1,130	1,440	3,290	2,210	1,610
16	1,020	1,160	1,020	3,280	51,560	2,910	908	1,310	2,030	3,210	2,100	1,680
17	953	1,050	961	2,220	25,210	3,570	908	1,250	1,610	8,830	2,050	1,740
18	953	1,050	872	1,520	41,670	3,140	855	1,310	1,390	12,500	2,010	1,740
19	982	989	819	1,170	39,550	2,770	855	1,360	1,310	6,600	2,010	1,680
20	1,010	1,150	819	18,650	34,330	3,880	805	1,360	1,260	4,100	1,960	1,740
21	981	1,180	1,490	11,480	33,340	4,340	805	1,490	1,170	3,600	1,960	1,740
22	928	1,440	1,200	4,350	13,810	3,180	855	1,610	12,400	6,460	1,910	1,740
23	901	1,590	819	19,670	7,130	2,630	805	1,800	16,240	7,700	1,850	1,800
24	901	1,550	1,450	7,060	5,230	3,000	908	1,870	8,370	4,060	1,850	3,110
25	876	3,290	1,360	3,130	4,240	3,470	855	1,740	4,340	3,140	1,910	2,610
26	901	2,780	993	2,840	3,740	2,860	752	2,270	3,040	4,660	1,850	2,660
27	928	2,140	848	26,200	29,280	2,510	1,300	2,030	2,790	3,080	5,050	1,850
28	953	1,840	819	31,790	56,500	2,260	7,800	1,800	2,190	3,960	1,850	1,870
29	928	710	29,810	49,440	1,890	1,550	1,410	1,800	2,440	3,460	1,850	1,870
30	953	657	49,090	58,270	1,750	1,410	1,410	1,560	3,280	1,870	1,870	
31	1,020	657	16,460	4,200	4,200	4,200	1,410	1,140	126,700	126,700	57,880	
Sum			35,729	233,932	680,950	184,870	35,569	47,970	85,290	85,290	68,750	
30,851			34,876									

Month	Extreme Gage			Extreme Second-Feet		Average Second-Feet	Total	Acre-Feet			
	Foot		Day	High	Low			High	Maximum	Minimum	
	High	Low	Day	Day	Day			Day	Day	Day	
Jan.	.85	.52	† 9	1,100	† 24	848	995	61,190	156,534	351,700	54,800
Feb.	2.43	.46	25	3,670	† 11	720	1,280	70,870	139,725	423,700	41,050
Mar.	1.90	.13	5	2,860	31	607	1,130	69,180	129,634	223,400	30,960
Apr.	19.16	.03	30	52,970	† 10	413	7,800	464,000	142,685	464,000	28,300
May	22.05	1.77	30	64,630	9	2,880	22,000	1,351,000	275,412	1,351,000	33,360
June	15.94	1.14	3	40,960	30	1,650	6,160	366,700	322,694	1,994,000	337
July	1.61	.56	† 27	2,310	† 20	752	1,150	70,550	267,842	1,250,000	17,470
Aug.	1.97	.62	28	3,600	† 14	957	1,550	95,140	262,912	883,000	36,970
Sept.	12.60	.69	22	29,130	6	1,080	2,840	169,200	502,374	2,943,000	30,900
Oct.	7.64	.82	18	14,200	† 8	1,310	4,090	251,300	398,224	1,951,000	31,910
Nov.	2.33	1.02	6	3,600	† 29	1,800	2,290	136,400	184,130	570,800	43,110
Dec.	2.82	.98	24	4,200	† 4	1,610	1,870	114,800	158,958	352,700	52,230
Yearly	22.05	.03		64,630		413	4,450	3,220,330	2,941,124	7,017,110	786,640

† And other days ** Determined by slope-area calculations † Period 1924-1957

RIO SALADO AT LAS TORTILLAS, TAMAULIPAS

DESCRIPTION: Water-stage recorder and cable with stand-up cable car, and control wall with notch opening of 2,500 second-feet capacity, located 6.2 miles southeast of the town of Las Tortillas, Tamaulipas, 2 miles below the confluence of the Río Sabinas with the Río Salado, and 24.8 miles above the confluence of the Río Salado with the Río Grande. This confluence is 949.8 river miles below the American Dam at El Paso, Texas. The zero of the gage is 325.72 feet above mean sea level, U.S.C. & G.S. datum.

RECORDS: Based on 33 meter measurements during the year, a stable rating curve up to 2,500 second-feet, and a continuous record of gage heights. Computations by shifting channel methods for flows greater than 2,500 second-feet. Records available: September 9, 1953 through December 1957. Records are also available for a station at Cd. Guerrero, 18.6 miles downstream, from 1900 through 1913 and 1923 through September 8, 1953.

REMARKS: Reservoirs and irrigation diversions modify the flow at this station.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 19,700 second-feet on September 3, 1953, with a gage height of 15.94 feet. Min. frequently no flow. Extreme flow data for the station at Cd. Guerrero, prior to 1954, may be found in previous water bulletins.

Average Flow in Second-Feet †

Daily:	Max.	18,800	Sept. 3, 1955	Min.	0	Frequently
Monthly:	Max.	2,430	Sept. 1955	Min.	0	Frequently
Yearly:	Max.	292	1955	Min.	56.8	1956

Mean Daily Discharge in Second-Feet 1957 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0	0	0	0	77.0	213	0	0	0	31.4	0	0
2	0	0	0	0	21.5	222	0	0	0	16.6	0	0
3	0	0	0	0	3.9	1,540	0	0	0	12.7	0	0
4	0	0	0	0	1.4	2,370	0	0	0	6.4	0	0
5	0	0	0	0	.7	483	0	0	172	3.9	0	0
6	0	0	0	0	0	236	0	0	48.4	3.2	0	0
7	0	0	0	0	0	409	0	0	6.4	3.2	0	0
8	0	0	0	0	0	267	0	0	3.2	2.5	0	0
9	0	0	0	0	0	123	0	0	237	1.4	0	0
10	0	0	0	0	0	62.2	0	0	16.6	1.4	0	0
11	0	0	0	0	0	36.4	0	0	6.4	1.4	6.3	0
12	0	0	2.5	0	0	16.6	0	0	3.2	.7	3.9	0
13	0	0	3.2	0	0	9.2	0	0	3.9	.7	3.2	0
14	0	0	.7	0	103	12.7	0	0	3.2	0	2.5	0
15	0	0	34.3	0	31.4	21.5	0	0	3.2	0	1.4	0
16	0	0	445	0	6.4	26.5	0	0	3.2	0	.7	0
17	0	600	42.4	0	1.4	9.2	0	0	3.2	0	0	0
18	0	114	6.4	0	0	37.4	0	0	2.5	1.4	0	0
19	0	16.6	9.2	0	0	597	0	0	1.4	297	0	0
20	0	16.6	3.2	0	0	1,870	0	0	.7	166	0	0
21	0	3.9	2.5	0	0	713	0	0	0	69.6	0	0
22	0	2.5	0	0	0	132	0	0	1,280	36.4	0	0
23	0	1.4	0	0	0	55.1	0	0	1,520	21.5	0	0
24	0	.7	0	0	0	26.5	0	0	2,460	12.7	0	0
25	0	.7	0	0	0	21.5	0	0	1,440	6.4	0	0
26	0	0	0	0	0	6.4	0	0	356	3.2	0	0
27	0	0	0	166	2,920	3.2	0	0	177	3.2	0	0
28	0	0	0	190	1,310	3.2	0	0	93.9	2.5	0	0
29	0	0	0	823	2,530	1.4	0	0	69.6	1.4	0	0
30	0	0	320	301	166	1.4	0	0	62.2	.7	0	0
31	0	0	0	0	0	0	0	0	0	0	0	0
Sum	0	756.4	1,499	7,473.7	9,525.4	0	0	0	7,973.2	707.5	18.0	0

Current Year 1957

Period Oct. 1953-1957

Month	Extreme Gage Feet			Extreme Second-Feet		Average Second-Feet	Total Acre-Feet	Acre-Feet		
	High	Low	Day	High	Low			Average	Maximum	Minimum
Jan.	0	0	0	0	0	0	0	2.6	7.3	0
Feb.	2.62	0	17	1,610	† 1	0	27.0	1,500	376	1,500
Mar.	1.97	0	16	865	† 1	0	17.7	1,090	272	1,090
Apr.	2.76	0	29	1,790	† 1	0	50.0	2,970	5,567	19,300
May	13.25	0	28	16,070	† 5	0	241	14,820	20,495	45,230
June	3.67	0	4	3,190	30	0	318	18,890	6,510	18,890
July	0	0	0	0	0	0	0	70.0	195	0
Aug.	0	0	0	0	0	0	0	7,930	31,700	0
Sept.	3.81	0	24	3,390	† 1	0	266	15,810	49,935	144,800
Oct.	1.80	0	19	713	† 13	0	22.8	1,400	8,770	25,890
Nov.	.20	0	11	6.4	† 1	0	.6	35.7	1,307	2,610
Dec.	0	0	0	0	0	0	0	* 66.2	169	0
Yearly	13.25	0	16,070	0	78.1	56,515.7	101,300.8	211,047	41,238.2	

* Estimated * Partly estimated † And other days ‡ Period September 1953-1957

RIO GRANDE AT CHAPENO, TEXAS

DESCRIPTION: Water-stage recorder, located 2.5 miles below Falcón Dam, 9.9 miles above the confluence of the Río Alamo with the Rio Grande, and 976.9 miles below the American Dam at El Paso, Texas. A cable with stand-up cable car equipped for winch and heavy weights is located approximately 4,000 feet below the recorder. The zero of the gage is 171.52 feet above mean sea level, U.S.C. & G.S. datum.

RECORDS: Based on 89 meter measurements made during the year, 46 by the United States and 43 by the Mexican Section of this Commission. Computations by shifting channel methods. Records available: December 17, 1952 through December 1957.

REMARKS: This station was placed in operation on December 17, 1952. Except for tributary inflows below Falcón Dam, flow at this station, after August 25, 1953, was controlled largely by requested releases from Falcon Reservoir.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 22,600 second-feet on August 27, 1953, with a gage height of 7.98 feet of which approximately 20,000 second-feet was observed to have come from an arroyo in Mexico immediately below Falcon Dam. Min. zero flow occurred on June 17 through July 1, 1953, before storage began at Falcon Dam.

Average Flow in Second-Feet \$

Daily:	Max. 13,000	May 26, 1957	Min. 0	June 17-July 1, 1953
Monthly:	Max. 8,550	May 1955	Min. 7.8	June 1953
Yearly:	Max. 3,810	1955	Min. 943	1953

Mean Daily Discharge in Second-Feet 1957 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1,250	1,510	2.9	576	6.2	9,380	814	1,590	6,930	1,200	2,430	518
2	1,220	1,380	2.7	625	5.1	2,590	729	1,360	6,500	854	2,070	2,510
3	1,220	1,200	2.8	660	4.9	38.4	926	1,400	6,070	1,170	1,820	637
4	1,380	1,210	2.9	660	4.7	2,210	1,980	1,350	5,700	1,330	1,420	687
5	1,560	1,260	3.0	670	3.9	7,380	2,040	1,170	5,030	1,620	1,400	2,520
6	1,560	1,320	3.6	104	106	6,610	1,970	1,220	3,690	4,110	1,720	684
7	1,570	1,840	3.8	9.6	109	7,140	2,390	1,520	2,270	3,990	1,280	594
8	1,580	1,550	4.9	5.9	305	4,850	2,670	1,290	1,980	4,150	1,350	772
9	2,650	1,560	6.3	3.8	406	3,010	2,290	1,180	1,800	5,110	1,530	848
10	3,250	911	194	3.8	411	2,730	2,530	1,670	2,190	4,780	131	718
11	3,770	951	425	3.8	518	3,080	1,930	4,150	3,040	3,770	571	748
12	4,380	1,040	210	4.1	926	2,960	1,890	3,770	2,820	3,240	682	823
13	4,600	1,260	19.5	169	909	3,070	1,910	3,420	3,020	3,850	714	1,140
14	4,540	1,270	7.9	620	1,290	4,320	2,310	3,400	2,600	4,090	699	1,560
15	4,380	1,270	7.4	95.9	2,540	4,320	1,770	3,430	3,290	3,610	693	1,660
16	4,260	1,260	6.3	9.6	4,320	4,690	1,280	3,870	3,180	3,150	754	1,620
17	3,730	583	5.0	6.2	5,120	3,540	1,010	4,060	2,050	2,300	679	1,690
18	3,770	22.9	4.6	4.6	5,880	2,830	1,200	3,410	1,040	2,030	691	1,480
19	4,060	11.0	4.0	4.5	9,520	495	1,560	4,680	703	2,110	994	3,840
20	2,970	7.7	4.1	4.6	8,230	620	2,080	2,740	1,520	2,830	1,230	3,910
21	2,920	5.9	4.0	1,590	7,310	772	2,260	3,400	2,020	2,840	3,740	3,920
22	3,010	6.1	2.6	102	8,170	623	2,140	2,920	1,350	2,520	2,590	4,060
23	2,320	5.6	2.7	464	9,120	610	876	3,180	688	2,560	372	3,640
24	2,160	5.0	1.5	44.1	10,400	776	1,930	3,580	977	2,710	72.3	3,600
25	2,160	4.6	1.5	680	11,300	837	1,270	4,060	752	3,510	570	3,650
26	1,920	3.9	1.7	1,670	13,000	753	1,730	4,380	698	4,300	2,060	3,850
27	2,040	2.9	2.2	2,630	4,830	691	2,160	5,090	739	4,500	3,010	2,490
28	2,110	3.0	3.7	615	41.4	713	2,180	6,320	890	4,470	651	2,540
29	1,970		3.5	342	18.5	697	2,480	7,290	1,180	4,860	694	3,100
30	1,830		3.6	15.4	18.8	646	2,050	6,300	1,190	4,940	2,430	3,100
31	1,830		381		4,700		1,690	6,460		3,230		2,580
Sum			21,453.6	12,392.9	82,981.4		103,660	99,734	65,489			
81,970			1,328.7	109,523.5	56,045		75,907	39,047.3				

Current Year 1957

Month	Extreme Gage Feet			Extreme Second-Feet		Average Second-Feet	Total	Acre-Feet		
	High	Low	Day	High	Low			Average	Maximum	Minimum
Jan.	4.70	3.00	15	5,030	2	1,090	2,640	163,000	225,240	368,000
Feb.	3.75	.65	7	2,480	26	1.7	766	42,600	193,660	349,000
Mar.	3.91	.57	11	2,830	124	1.5	42.9	2,640	135,568	276,000
Apr.	5.04	.59	27	6,080	19	1.8	413	24,600	136,220	347,000
May	7.35	.64	26	13,100	5	3.6	3,530	217,000	266,360	526,000
June	6.55	1.01	1	10,500	4	22.0	2,770	165,000	245,092	437,000
July	4.89	1.42	29	5,850	24	82.8	1,810	111,000	63,340	111,000
Aug.	6.61	1.55	31	9,800	3	98.6	3,340	206,000	125,140	206,000
Sept.	6.20	1.35	2	8,680	23	74.8	2,530	151,000	101,500	153,000
Oct.	5.84	1.56	29	7,740	f 2	99.9	3,220	198,000	83,600	198,000
Nov.	5.32	.99	21	6,490	25	20.4	1,300	77,500	71,120	110,000
Dec.	5.40	1.22	25	6,670	1	33.9	2,110	130,000	138,300	188,000
Yearly	7.35	.57		13,100		1.5	2,060	1,488,340	1,785,140	2,758,700
										682,461

^f And other days [†] Period December 1952 through December 1957.

RIO ALAMO AT CD. MIER, TAMAULIPAS

DESCRIPTION: Water-stage recorder and cable with sit-down cable car and reinforced concrete weir for measuring flows up to 177 second-feet, located 3.1 miles above the confluence of the Río Alamo with the Rio Grande and .6 mile west of Cd. Mier, Tamaulipas, at a point called "El Paso del Cántaro". This stream enters the Rio Grande 986.8 river miles below the American Dam at El Paso, Texas. On June 11, 1952, the recorder was moved from a point 230 feet above a new highway bridge to a point 285 feet below the bridge and 312 feet above the weir. The zero of the gage is 188.35 feet above mean sea level, U.S.C. & G.S. datum.

RECORDS: Based on 23 meter measurements made at high flows during the year, the weir discharge table at low flows, and a continuous record of gage heights. High-flow computations by shifting channel methods. Records available: July 1, 1923 through December 1957.

REMARKS: Small reservoirs and irrigation diversions modify the flow of this spring-fed stream at this station.

EXTREME FLOWS FROM RECORDS: Momentary: Max. * 144,800 second-feet on September 11, 1948, with a gage height of 33.56 feet. Periods of no flow have occurred at times during all years of record, except 1934 and 1935.

Average Flow in Second-Feet †

Daily:	Max.	87,230		Sept. 11, 1948		Mn.	0	Frequently
Monthly:	Max.	5,170		Sept. 1948		Min.	0	
Yearly:	Max.	536		1953		Min.	16.4	Frequently 1929

Mean Daily Discharge in Second-Feet 1957 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0	0	0	0	98.5	505	1.0	0	1.1	0	0	0
2	0	0	0	0	32.5	2,180	.6	0	.4	0	0	0
3	0	0	0	0	14.8	223	0	0	0	0	0	0
4	0	0	0	0	8.1	41.0	0	0	0	0	0	0
5	0	0	0	0	4.6	72.0	0	0	993	0	0	0
6	0	0	0	0	3.5	424	0	0	103	0	0	0
7	0	0	0	0	2.5	43.1	0	0	17.3	0	0	0
8	0	0	0	0	568	176	0	0	6.4	0	0	0
9	0	0	0	0	17.3	43.4	0	0	3.5	0	3.5	0
10	0	0	0	0	5.3	17.3	0	0	1.8	0	15.2	0
11	0	0	371	0	2.1	7.8	0	0	1.1	0	7.4	0
12	0	0	453	0	1.1	4.9	0	0	.7	0	2.8	0
13	0	0	311	0	.7	3.5	0	0	0	0	1.4	0
14	0	0	27.5	0	.7	2.5	0	0	0	0	1.1	0
15	0	0	1,320	0	.3	1.4	0	0	0	0	.4	0
16	0	0	611	0	0	1.1	0	0	0	0	0	0
17	0	2,210	69.9	0	0	1.1	0	0	219	122	0	0
18	0	230	20.8	0	0	.7	0	0	1,270	132	0	0
19	0	30.0	8.5	0	0	210	0	125	73.8	50.1	0	0
20	0	11.3	3.5	47.3	27.2	104	0	209	22.6	12.0	0	0
21	0	6.0	2.1	13.4	14.5	91.8	0	10.2	8.8	7.1	0	0
22	0	2.8	.7	8.5	5.7	30.0	0	3.2	4.9	4.2	0	0
23	0	2.5	0	3.5	2.8	12.4	0	2.5	3.2	1.8	0	0
24	0	1.8	0	4.6	1.1	7.8	0	1.4	2.5	1.1	0	0
25	0	1.1	0	10.2	.7	18.0	0	.4	1.8	.7	0	81.6
26	0	.7	0	2.8	0	30.7	0	0	.4	0	0	38.2
27	0	0	5,860	10,030	10.6	0	0	0	0	0	0	11.3
28	0	0	0	7,210	3,450	4.6	0	0	0	0	0	5.0
29	0	0	0	4,340	279	2.5	0	3.2	0	0	0	2.8
30	0	0	0	756	55.4	1.8	0	13.4	0	0	0	2.5
31	0	0	0	21.9	0	0	0	2.8	0	0	0	2.1
Sum		2,496.2	18,256.3	4,272.0	1.6	371.1	2,735.3	331.0	31.8	143.5		
0		3,199.0	14,648.3									

Current Year 1957 Period 1924-1957

Month	Extreme Gage Feet		Extreme Second-Feet		Average Second-Feet	Total	Acre-Feet		
	High	Low	Day	Day			Average	Maximum	Minimum
				High	Low				
Jan.			0		0	0	3,709	34,920	0
Feb.	5.48		17	6,430	† 1	0	4,940	2,763	25,550
Mar.	4.92		11	4,410	† 1	0	6,350	2,861	19,830
Apr.	14.14		27	22,280	† 1	0	609	36,210	7,791
May	11.25		27	16,100	†15	0	473	29,050	14,605 *
June	4.92	.02	1	5,010	†15	.7	142	8,470	12,627
July	.03		1	10.6	† 3	0	.1	6,484	83,240
Aug.	3.08		19	1,730	† 1	0	12.0	736	37,590
Sept.	3.81		5	2,920	† 2	0	91.1	5,430	19,044
Oct.	2.17		17	710	† 1	0	10.7	657	205,700
Nov.	.46		9	35.3	† 1	0	1.1	63.2	307,900 *
Dec.	1.48		25	258	† 1	0	4.6	285	14,838
Yearly			22,280		0	127	92,194.4	127,939	387,800
									11,908.7

* Partly estimated † And other days † Period 1924-1957

CONTRIBUTIONS FROM RIO SAN JUAN

DESCRIPTION: The discharges reported below comprise the total flow entering the Rio Grande through the Río San Juan Channel and the various drains serving the Río San Juan irrigation system between Roma and Anzaldúa Dam site. The confluence of the Río San Juan and the Rio Grande is 1,010.4 river miles below the American Dam at El Paso, Texas, 3.9 river miles above Fort Ringgold gaging station, and 9.4 river miles below Marte Gómez Dam on the Río San Juan.

RECORDS: The portion of water reaching the Rio Grande above Fort Ringgold gaging station through the Río San Juan Channel was measured at a station consisting of water-stage recorder and cable with stand-up cable car equipped for winch and heavy weights, located opposite Camargo, Tamaulipas, about 3.1 river miles above the confluence with the Rio Grande. The balance consisted of discharges through the Rancherías and Los Fresnos drains which were determined by prorating between weekly current meter measurements. The water reaching the Rio Grande below Fort Ringgold gaging station via Puertecitos, Huizache, and Morillo drains was determined by prorating between weekly current meter measurements. All storm water measured at the above-mentioned drains was deducted and is not shown here. No water was released from Marte Gómez Reservoir for use in the United States during 1957. Records available: January 1953 through December 1957.

REMARKS: No water returned to the Rio Grande through Los Fresnos Drain during 1957. Mean daily discharges of the various other contributions are found in the following two pages, including separate mean daily discharges of Morillo Drain for correlation with electrical conductivity and salt content determinations of water samples, taken at this station, which appear on page 77 of this bulletin.

Above Fort Ringgold Station

Month	Current Year 1957						Period 1953-1957		
	Extreme Gage Feet		Ø Extreme Second-Feet		Average Second-Feet	Total Acre-Feet	Acre-Feet		
	High	Low	Day	High			Average	Maximum	Minimum
Jan.			† 2	8.0	†30	2.0	6.2	379	638
Feb.			21	7.1	5	1.7	4.5	246	497
Mar.			16	25.0	23	4.0	9.5	582	594
Apr.			29	1,540	23	3.8	71.9	4,280	2,842
May			27	1,780	21	2.0	81.8	5,040	2,246
June			2	3,930	18	6.6	153	9,110	3,491
July			2	11.5	30	2.4	6.9	424	1,138
Aug.			31	7.7	†19	2.0	4.2	260	14,870
Sept.			22	248	†10	4.1	26.8	1,600	62,472
Oct.			15	8.3	† 9	2.4	4.1	252	48,722
Nov.			†25	7.8	1	4.5	6.8	405	235,600
Dec.			10	6.7	†23	4.1	5.1	317	8,351
Yearly				3,930		1.7	31.6	22,895	147,282
									637,700.4
									18,151

Below Fort Ringgold Station

Month	Current Year 1957						Period 1953-1957		
	Extreme Gage Feet		Ø Extreme Second Feet		Average Second Feet	Total Acre Feet	Acre Feet		
	High	Low	Day	High			Average	Maximum	Minimum
Jan.			4	15.0	19	8.3	10.7	661	1,627
Feb.			22	46.2	1	12.3	24.5	1,360	2,810
Mar.			14	69.5	26	16.9	31.1	1,910	2,020
Apr.			30	50.5	9	15.9	27.2	1,620	2,630
May			2	53.3	21	18.8	30.9	1,900	3,818
June			25	86.2	1	42.1	65.6	3,900	4,638
July			1	58.2	31	20.4	35.6	2,190	2,670
Aug.			31	22.8	13	11.8	16.4	1,010	1,440
Sept.			24	47.8	11	17.8	27.3	1,630	1,622
Oct.			15	28.3	1	16.7	24.4	1,500	1,468
Nov.			30	22.9	26	17.7	20.1	1,200	1,079
Dec.			3	26.8	†10	17.0	19.0	1,170	1,201
Yearly				86.2		8.3	27.7	20,051	27,023
									32,153
									20,051

† And other days Ø Mean daily

CONTRIBUTIONS FROM RIO SAN JUAN — Above Fort Ringgold Station

Mean Daily Discharge in Second-Feet

RANCHERIAS DRAIN

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.5	.8	.7	.7	1.7	8.7	.9	.4	.4	.3	.3	.9
2	.6	.8	.6	.7	1.8	9.5	.9	.4	.4	.3	.3	1.0
3	.6	.7	.6	.7	1.5	10.2	.8	.4	.4	.3	.2	1.1
4	.6	.7	.6	.8	1.2	10.9	.7	.5	.4	.3	.3	1.0
5	.6	.6	.6	.8	.9	9.5	.6	.5	.3	.3	.3	1.0
6	.6	.6	.5	.8	.6	8.1	.5	.5	.3	.3	.2	.9
7	.6	.6	.5	.9	.4	6.6	.5	.5	.3	.3	.2	.9
8	.7	.5	.5	.9	.4	5.2	.4	.5	.2	.3	.2	.8
9	.7	.5	1.3	.9	.5	3.7	.3	.4	.2	.3	.2	.7
10	.7	.4	2.1	1.0	.5	2.3	.4	.4	.2	.3	.3	.7
11	.7	.4	2.9	1.0	.5	.9	.5	.4	.2	.3	.3	.7
12	.7	.4	3.7	1.0	.6	.8	.6	.3	.2	.3	.3	.7
13	.6	.4	4.5	1.0	.6	.8	.7	.3	.2	.3	.3	.8
14	.6	.3	5.3	1.1	.7	.7	.8	.3	.2	.3	.3	.8
15	.6	.3	6.1	1.1	.7	.7	.9	.4	.2	.2	.2	.9
16	.6	.5	7.0	1.1	.6	.7	1.0	.4	.3	.3	.2	.9
17	.6	.7	5.3	1.0	.6	.6	.9	.5	.3	.2	.2	1.0
18	.6	.9	3.7	1.0	.6	.6	.8	.5	.2	.3	.2	.9
19	.6	1.1	2.0	.9	.6	.6	.7	.6	.2	.3	.2	.9
20	.7	1.3	.4	.8	.6	.7	.5	.6	.2	.3	.2	.8
21	.7	1.5	.4	.7	.6	.7	.4	.7	.2	.3	.2	.7
22	.7	1.4	.5	.6	1.3	.8	.3	.6	.2	.3	.3	.7
23	.8	1.3	.5	.6	2.1	.8	.2	.5	.2	.3	.3	.6
24	.8	1.2	.6	.7	2.8	.9	.2	.5	.2	.3	.3	.6
25	.8	1.1	.6	.8	3.6	.9	.2	.4	.2	.4	.4	.5
26	.8	1.0	.7	1.0	4.3	.9	.2	.3	.3	.4	.4	.5
27	.9	.9	7	1.1	5.0	.9	.2	.2	.3	.4	.5	.4
28	.9	.8	.7	1.2	5.8	.9	.3	.3	.3	.4	.6	.4
29	1.0		.7	1.4	6.5	.9	.3	.2	.3	.4	.7	.3
30	.9		.7	1.5	7.2	.9	.3	.3	.3	.4	.8	.2
31	.9		.7		8.0		.4	.3	.4	.4		.2
Sum	21.7	21.7	55.7	27.8	62.8	90.4	16.4	13.1	7.8	9.8	9.4	22.5
Avg.	.7	.8	1.8	.9	2.0	3.0	.5	.4	.3	.3	.3	.7
Vol.^t	43.0	43.0	110	55.1	125	179	32.5	26.0	15.5	19.4	18.6	44.6

RIO SAN JUAN AT CAMARGO, TAMAULIPAS

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	7.4	1.1	5.7	4.2	21.5	38.9	10.2	3.2	7.8	3.9	4.2	4.2
2	7.4	1.1	5.7	4.2	18.7	3,920	10.6	3.9	8.5	3.5	4.9	3.9
3	7.4	1.1	5.7	4.2	16.2	183	10.6	4.2	8.8	3.5	5.3	3.2
4	7.4	1.1	6.0	4.2	13.4	46.3	10.6	4.9	8.1	3.2	5.7	3.5
5	7.1	1.1	6.0	4.2	10.9	39.6	10.6	5.3	7.4	3.2	6.0	3.9
6	6.7	1.4	6.0	4.6	8.1	32.5	10.2	6.0	6.7	2.8	6.0	4.2
7	6.4	1.4	7.1	4.6	5.7	25.8	10.2	5.3	6.0	2.5	6.4	4.9
8	6.4	1.4	7.1	4.6	5.7	18.7	10.2	4.9	5.3	2.5	6.4	5.3
9	6.0	1.8	9.5	4.6	5.7	12.0	10.2	4.2	4.6	2.1	6.4	5.7
10	5.7	2.1	10.9	4.9	5.7	11.3	9.5	3.9	3.9	3.2	6.7	6.0
11	5.3	2.1	12.0	4.9	5.3	11.0	8.8	3.2	3.9	4.2	6.7	5.7
12	5.3	2.8	13.4	5.3	5.3	10.3	7.8	2.8	3.9	4.9	6.7	5.3
13	5.7	3.2	14.5	5.7	5.3	9.5	7.1	2.1	3.9	6.0	6.7	4.9
14	5.7	3.9	15.5	6.0	5.3	8.8	6.4	2.1	3.9	7.1	7.1	4.9
15	5.7	4.6	17.0	6.0	4.6	8.1	5.3	2.1	3.9	8.1	7.1	4.6
16	5.7	4.9	18.0	6.4	4.2	7.4	4.6	1.8	93.2	7.1	7.1	4.2
17	6.0	5.7	14.5	6.0	3.5	6.7	4.6	1.8	127	6.0	7.1	3.9
18	6.0	5.6	10.9	5.3	3.2	6.0	4.6	1.8	32.8	4.9	7.0	3.9
19	6.0	5.6	7.4	4.9	2.5	6.4	4.6	1.4	14.5	4.2	7.0	3.9
20	6.0	5.6	3.9	4.6	2.1	7.4	4.2	1.4	3.9	3.2	7.1	3.9
21	6.0	5.6	3.9	4.2	1.4	7.4	4.2	1.4	3.9	2.1	7.1	3.5
22	6.0	5.6	3.9	3.5	1.4	7.8	4.2	2.1	248	2.1	7.1	3.5
23	6.0	5.6	3.5	3.2	1.4	8.1	4.2	2.8	105	2.5	7.1	3.5
24	6.0	5.6	3.5	3.2	1.4	8.8	3.9	3.5	17.0	2.5	7.4	3.5
25	6.0	5.6	3.5	3.2	1.4	9.2	3.5	4.2	15.2	2.8	7.4	3.9
26	4.9	5.6	3.5	3.2	1.4	9.5	3.2	4.9	13.1	2.8	7.4	4.2
27	3.5	5.6	3.5	3.2	1,780	9.5	3.2	5.7	11.3	2.8	6.7	4.6
28	2.5	5.7	3.9	441	388	9.9	2.8	6.0	9.5	3.2	6.4	4.6
29	1.1		3.9	1,540	53.0	9.9	2.5	6.7	7.8	3.2	5.7	4.9
30	1.1		3.9	24.7	48.0	10.2	2.1	7.1	5.7	3.5	4.9	5.3
31	1.1		4.2		43.4		2.8	7.4		3.9		5.7
Sum	169.5	102.5	238.0	2,128.8	2,473.7	4,499.7	197.5	118.1	794.5	117.5	194.8	137.2
Avg.	5.5	3.7	7.7	71.0	79.8	150	6.4	3.8	26.5	3.8	6.5	4.4
Vol.^t	336	203	472	4,220	4,910	8,930	392	234	1,580	233	386	272

^t Volume in acre-feet

CONTRIBUTIONS FROM RIO SAN JUAN – Below Fort Ringgold Station
Mean Daily Discharge in Second-Feet

PUERTECITOS, HUIZACHE, AND MORILLO DRAINS

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	14.7	12.3	28.0	19.1	51.9	42.1	58.2	19.8	24.5	16.7	21.5	24.2
2	14.8	12.8	25.6	19.4	53.3	44.2	53.6	19.2	26.1	17.7	20.8	25.6
3	14.9	13.3	25.3	18.9	51.8	46.4	53.0	18.6	27.7	18.8	20.0	26.8
4	15.0	13.8	25.0	18.4	48.2	48.5	52.4	18.0	26.3	19.8	19.3	25.4
5	14.3	14.4	24.7	17.9	44.7	65.1	51.8	17.5	24.9	20.9	18.6	24.0
6	13.5	14.9	24.4	17.4	41.0	56.3	51.2	16.9	23.4	21.9	19.0	22.6
7	12.8	15.5	24.1	16.9	37.5	60.2	50.6	16.1	22.1	23.0	19.4	21.2
8	12.0	16.0	23.8	16.4	34.4	64.2	50.0	15.4	20.7	24.1	19.8	19.8
9	11.3	15.9	23.7	15.9	32.0	68.1	49.4	14.7	19.3	25.1	20.2	18.4
10	10.6	15.7	32.8	16.1	29.7	72.0	48.6	14.0	17.9	25.7	20.7	17.0
11	9.8	15.5	42.0	16.3	27.2	75.9	47.9	13.3	17.8	26.2	21.1	17.0
12	9.6	15.9	51.2	16.5	24.9	73.1	43.8	12.5	18.4	26.7	21.5	17.1
13	9.4	16.1	60.4	16.6	22.5	70.2	39.7	11.8	19.0	27.2	21.9	17.1
14	9.3	16.4	69.5	16.8	20.1	67.3	35.5	12.5	19.6	27.8	22.4	17.2
15	9.1	16.6	62.4	17.0	19.9	64.4	31.5	13.2	20.3	28.3	22.7	17.2
16	8.9	21.0	55.3	17.2	19.7	61.6	27.4	13.9	20.8	28.0	22.0	17.3
17	8.8	25.5	48.1	20.5	19.5	58.7	26.9	14.5	21.6	27.7	21.3	17.3
18	8.6	29.9	40.9	23.9	19.4	55.8	26.6	15.2	25.4	27.3	20.5	17.3
19	8.3	34.3	33.7	27.3	19.2	60.1	26.1	15.9	29.1	27.0	19.8	17.4
20	8.4	38.7	26.4	30.7	19.0	64.5	25.7	16.6	32.8	26.6	19.1	17.4
21	8.8	43.1	24.9	34.1	18.8	68.8	25.3	17.2	36.6	26.3	18.3	17.4
22	8.9	46.2	23.2	37.5	20.9	73.2	24.9	17.1	40.4	26.2	18.2	17.4
23	9.1	43.6	21.7	40.8	23.0	77.6	24.5	16.9	44.1	25.8	18.1	17.5
24	9.3	41.0	20.1	42.2	25.1	81.9	24.0	16.8	47.8	25.5	18.0	17.5
25	9.5	38.4	18.5	43.6	27.2	86.2	23.5	16.6	43.4	25.1	17.8	17.6
26	9.7	35.8	16.9	45.0	29.4	81.5	23.0	16.5	38.9	24.7	17.7	17.5
27	10.0	33.2	17.3	46.4	31.5	76.9	22.5	16.3	34.5	24.4	19.0	17.6
28	10.2	30.6	17.7	47.8	33.6	72.2	22.0	17.9	30.1	24.0	20.3	17.5
29	10.7		18.0	49.2	35.8	67.6	21.5	19.6	25.6	23.7	21.6	17.6
30	11.2		18.3	50.5	37.9	62.9	21.0	21.2	21.1	22.9	22.9	17.5
31	11.7		18.7		40.0		20.4	22.8		22.2		17.6
Sum	333.2	686.4	962.6	816.3	959.1	1,967.5	1,102.5	508.5	820.2	757.3	603.5	590.0
Avg.	10.7	24.5	31.1	27.2	30.9	65.6	35.6	16.4	27.3	24.4	20.1	19.0
Vol.t	661	1,360	1,910	1,620	1,900	3,900	2,190	1,010	1,630	1,500	1,200	1,170

MORILLO DRAIN

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	10.0	8.8	18.9	12.9	31.1	23.1	47.9	15.4	20.3	13.5	16.8	19.9
2	10.0	9.3	16.6	13.0	31.0	24.3	43.0	14.9	22.0	14.4	16.2	21.2
3	10.1	9.7	16.5	12.5	30.9	25.5	42.6	14.5	23.7	15.3	15.6	22.4
4	10.1	10.2	16.3	12.1	28.6	26.7	42.2	14.1	22.4	16.2	14.9	21.0
5	9.6	10.7	16.2	11.7	26.4	32.1	41.8	13.7	21.0	17.1	14.3	19.7
6	9.1	11.2	16.0	11.2	24.1	37.6	41.4	13.3	19.7	18.0	14.8	18.3
7	8.7	11.7	15.9	10.8	21.9	43.1	40.9	12.7	18.4	18.9	15.2	16.9
8	8.2	12.2	15.7	10.4	19.6	48.6	40.5	12.0	17.0	19.8	15.7	15.5
9	7.8	12.0	15.5	10.0	18.0	54.0	40.1	11.4	15.7	18.5	16.1	14.1
10	7.3	11.8	24.7	10.1	16.5	59.5	39.7	10.8	14.4	21.2	16.6	12.7
11	6.9	11.7	33.8	10.2	14.8	65.0	39.2	10.1	15.0	21.8	17.0	12.8
12	6.6	11.5	43.0	10.3	13.2	62.4	35.5	9.5	15.6	22.3	17.4	12.9
13	6.3	11.3	52.1	10.3	11.7	59.8	31.7	8.9	16.3	22.9	17.9	13.0
14	6.1	11.1	61.3	10.5	10.1	57.2	28.0	9.4	17.0	23.4	18.3	13.1
15	5.8	10.9	54.1	10.6	10.1	54.6	24.2	10.0	17.6	24.0	18.8	13.2
16	5.5	14.3	47.0	10.7	10.1	52.0	20.5	10.5	18.2	23.7	17.9	13.3
17	5.3	17.7	39.8	13.7	10.1	49.4	20.3	11.0	18.9	23.4	17.1	13.5
18	5.0	21.1	32.7	16.8	10.1	46.8	20.1	11.6	22.5	23.1	16.2	13.5
19	4.7	24.4	25.5	19.9	10.1	51.1	19.8	12.1	26.1	22.8	15.4	13.7
20	4.9	27.8	18.4	23.0	10.1	55.4	19.6	12.6	29.7	22.5	14.5	13.7
21	5.2	31.2	17.3	26.0	10.1	59.7	19.4	13.2	33.3	22.2	13.7	13.8
22	5.4	34.6	16.3	29.1	11.3	64.0	19.2	13.0	36.9	21.9	13.7	13.8
23	5.7	32.3	15.3	32.2	12.4	68.4	19.0	12.7	40.5	21.4	13.7	13.9
24	5.9	30.1	14.2	32.0	13.6	72.7	18.6	12.5	44.1	20.9	13.7	14.0
25	6.1	27.9	13.2	31.9	14.8	77.0	18.2	12.4	39.8	20.5	13.6	14.1
26	6.3	25.6	12.1	31.8	16.0	72.1	17.8	12.1	35.4	20.0	13.6	14.1
27	6.6	23.4	12.2	31.6	17.2	67.3	17.4	11.9	31.0	19.5	14.9	14.1
28	6.8	21.1	12.4	31.5	18.4	62.4	17.0	13.6	26.7	19.1	16.1	14.1
29	7.3		12.5	31.4	19.6	57.6	16.6	15.3	22.3	18.6	17.4	14.1
30	7.8		12.6	31.3	20.7	52.8	16.2	17.0	17.9	18.0	18.6	14.1
31	8.3		12.7		21.9		15.8	18.6		17.4		14.2
Sum	219.4	495.6	730.8	559.5	534.5	1,582.2	874.2	390.8	719.4	622.3	475.7	468.6
Avg.	7.1	17.7	23.6	18.6	17.2	52.7	28.2	12.6	24.0	20.1	15.9	15.1
Vol.t	435	983	1,450	1,110	1,060	3,140	1,730	775	1,430	1,230	944	929

† Volume in acre-feet

RIO GRANDE AT FORT RINGGOLD, RIO GRANDE CITY, TEXAS

DESCRIPTION: Water-stage recorder and cable with stand-up cable car equipped for winch and heavy weights, located about 1 river mile below Rio Grande City, Texas, 3.9 river miles below the confluence of the Río San Juan with the Rio Grande, and 1,014.3 river miles below the American Dam at El Paso, Texas. The zero of the gage is 100.00 feet above mean sea level, U.S.C. & G.S. datum.

RECORDS: Based on 62 meter measurements during the year, 54 by the United States and 8 by the Mexican Section of this Commission, and a continuous record of gage heights. Computations by shifting channel methods. Records available: January 1955 through December 1957. Records composed of the addition of discharges of the Río Grande at Roma, Texas and the Río San Juan at Santa Rosalía, Tamaulipas are available for May, June, and October 1914; September 1916; September and October 1917; October 1918; September and October 1919; August and September 1920; June 1922; September 1923; and January 1924 through December 1931. Records are also available for the station "Rio Grande near Rio Grande City" for 1932 through 1954.

REMARKS: Reservoirs, diversions, and drainage returns modify the river flow at this station. Except for tributary inflows and intervening diversions below Falcón Dam, flow at this station is controlled largely by releases from Falcón Reservoir, 39.9 river miles upstream.

EXTREME FLOWS FROM RECORDS: The greatest recorded flow was 198,800 second-feet, which occurred September 5, 1932, at an elevation of 157.4 feet at the station 3 miles downstream. Zero flow occurred several days in June and July 1953.

Mean Daily Discharge in Second-Feet 1957 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1,340	1,660	46.0	35.3	696	8,360	789	1,660	7,270	1,300	2,930	2,350
2	1,270	1,440	44.9	485	236	14,400	919	1,520	6,290	1,350	2,450	919
3	1,250	1,300	45.2	492	145	3,790	830	1,310	6,020	960	2,230	2,330
4	1,270	1,200	45.0	630	94.1	878	964	1,400	5,750	1,200	1,850	849
5	1,420	1,190	44.9	635	74.3	4,500	1,920	1,310	6,040	1,360	1,500	1,020
6	1,550	1,240	40.2	678	70.5	6,850	1,990	1,150	5,080	2,080	1,490	2,350
7	1,560	1,340	30.7	338	64.1	8,350	2,010	1,190	3,200	3,840	1,810	868
8	1,570	1,690	30.8	81.7	94.6	6,090	2,370	1,420	2,080	3,620	1,400	734
9	1,560	1,500	32.6	39.4	369	3,470	2,580	1,220	1,920	4,540	1,590	872
10	3,230	1,410	33.2	27.5	407	2,910	2,310	1,160	1,730	4,790	1,690	927
11	3,310	958	27.9	18.6	420	2,890	2,400	2,550	2,440	4,480	515	840
12	4,080	965	2,600	15.1	500	3,010	1,920	3,440	2,880	3,320	611	882
13	4,360	1,060	955	14.6	876	3,000	1,920	3,450	2,870	3,530	870	959
14	4,440	1,250	470	20.6	924	3,430	2,030	3,300	2,960	3,670	888	1,290
15	4,270	1,240	303	340	1,190	3,760	2,130	3,270	2,750	3,880	874	1,580
16	4,560	1,260	1,290	322	3,220	4,100	1,750	3,510	3,230	3,520	874	1,660
17	3,940	3,160	553	98.6	41,110	3,990	1,300	3,850	3,160	3,110	930	1,640
18	3,740	1,600	183	60.2	4,900	3,600	1,150	3,830	2,780	2,500	861	1,910
19	3,860	405	95.8	50.6	6,590	2,700	1,300	3,880	1,540	2,280	872	2,000
20	3,850	166	75.3	37.0	9,140	1,120	1,600	5,270	840	2,300	1,120	3,750
21	2,740	110	55.8	30.2	6,630	904	2,180	3,460	1,590	2,780	1,680	3,920
22	2,880	102	44.5	974	7,320	942	2,280	3,290	2,270	2,700	3,720	3,930
23	2,700	294	31.0	372	7,980	739	2,030	3,040	1,660	2,660	2,380	3,830
24	2,170	363	24.7	233	9,860	704	1,030	3,360	2,570	2,570	658	3,640
25	2,120	130	25.5	226	10,900	846	1,860	3,740	1,090	2,840	408	3,670
26	2,050	82.7	26.4	501	12,200	879	1,320	3,920	922	3,680	495	3,760
27	1,950	63.5	26.4	2,390	16,400	847	1,730	4,410	871	4,450	2,200	3,480
28	2,060	57.1	24.5	18,800	15,800	805	2,100	5,350	899	4,040	2,830	2,650
29	2,080	23.6	7,260	3,900	829	2,070	6,950	1,020	4,400	891	2,740	
30	1,840	20.9	2,670	940	814	2,180	6,540	1,280	4,880	959	3,000	
31	1,760	20.2	1,130			2,000	5,960		4,570		3,040	
Sum			27,236.3	37,875.4	99,507		99,710	97,200		83,302	43,576	67,390
80,780			7,270.0	127,180.6	54,962							

Current Year 1957

Period 1955-1957

Month	Extreme Gage Feet			Extreme Second-Feet		Average Second-Feet	Total Acre-Feet	Acre-Feet			
	High	Low	Day	High	Low			Average	Maximum	Minimum	
Jan.	30.10	27.41	16	4,700	3	1,210	2,610	160,000	282,333	349,000	
Feb.	29.92	25.56	17	4,380	28	54.1	973	54,000	218,333	354,000	
Mar.	30.43	25.25	12	5,350	31	17.4	235	14,400	112,467	166,000	
Apr.	39.34	25.15	28	23,800	13	12.6	1,260	75,100	188,033	340,000	
May	38.79	25.64	28	22,200	† 7	61.0	4,100	252,000	334,667	521,000	
June	* 37.06	26.53	2	* 17,500	5	492	3,320	197,000	306,000	434,000	
July	29.55	26.50	9	3,720	1	490	1,770	109,000	73,200	109,000	
Aug.	32.50	26.88	30	7,620	10	731	3,220	198,000	137,667	198,000	
Sept.	32.56	26.55	1	7,730	20	548	2,780	165,000	120,467	165,000	
Oct.	31.32	26.65	31	5,970	3	659	3,140	193,000	104,167	193,000	
Nov.	30.43	26.02	22	4,980	26	227	1,450	86,400	77,800	117,000	
Dec.	30.44	26.50	27	4,890	9	526	2,170	134,000	165,000	184,000	
Yearly	* 39.34	25.15		23,800		12.6	2,260	1,637,900	2,120,134	2,816,800	1,634,900

* Estimated * Partly estimated † And other days

RIO GRANDE BELOW ANZALDUAS DAM

DESCRIPTION: Water-stage recorder and cable with stand-up cable car equipped for winch and heavy weights, located .5 mile below the headworks of the Anzalduas Canal and Anzalduas Dam site, 12.2 river miles above the international highway bridge between Hidalgo, Texas and Reynosa, Tamaulipas, 1,077.1 river miles below the American Dam at El Paso, Texas, and 171.1 river miles from the Gulf of Mexico. On June 20, 1956, in order to record extremely low flows, an auxiliary recorder was installed 575 feet upstream. The zero of both gages is 82.61 feet above mean sea level, U.S.C. & G.S. datum.

RECORDS: Based on 54 meter measurements during the year and a continuous record of gage heights. Computations by shifting channel methods. Records available: January 1, 1952 through December 31, 1957. Records for a station at Hidalgo Bridge, 11.7 river miles downstream, may be found in previous water bulletins.

REMARKS: Except for diversions, tributary inflows, and drainage returns below Falcón Dam, flow at this station, after August 25, 1953, was controlled largely by releases from Falcón Reservoir, 102.7 miles upstream, and especially by diversions into Anzalduas Canal, .5 mile upstream. When the Rio Grande flow at the Hidalgo-Reynosa international highway bridge exceeds an elevation of about 100 feet, a portion of the upstream river flow finds outlet to the Gulf of Mexico through flood channels which branch from the Rio Grande in the United States a short distance above this station and, in Mexico, within 113.8 miles below this station.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 27,900 second-feet on September 6, 1953, with a gage height of 21.85 feet. Min. periods of no flow have occurred on several occasions in 1953, 1954, 1956, and 1957.

Average Flow in Second-Feet

Daily:	Max. 27,440	Sept. 6, 1953	Min. 0	Occasionally
Monthly:	Max. 7,880	Sept. 1953	Min. 5.5	Mar. 1957
Yearly:	Max. 1,840	1953	Min. 158	1957

Mean Daily Discharge in Second-Feet 1957 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	24.7	31.1	10.6	.4	1,560	28.6	6.4	61.1	98.5	66.0	25.8	25.8
2	26.5	31.1	11.3	.4	202	345	.7	61.1	102	47.0	20.5	23.0
3	26.5	31.1	9.2	.4	31.8	2,690	0	63.6	101	51.6	17.0	23.0
4	19.4	31.1	9.9	.4	20.5	452	0	61.1	95.3	51.6	19.1	21.5
5	23.0	16.2	8.4	.8	19.1	20.1	0	58.6	95.3	51.6	24.4	27.2
6	24.7	7.4	8.4	8.8	19.1	12.4	3.5	61.1	93.2	51.6	21.5	27.2
7	24.7	4.2	8.4	8.8	15.9	21.9	45.9	61.1	90.4	53.3	24.3	23.0
8	31.8	7.4	9.9	7.1	32.5	23.0	30.7	58.6	72.7	51.6	21.5	21.5
9	26.5	32.8	9.9	2.8	38.1	21.2	37.8	56.5	57.9	49.4	21.5	23.0
10	45.9	37.4	11.3	2.1	41.7	15.2	39.9	56.5	57.9	62.2	21.5	23.0
11	23.0	37.4	4.6	1.4	5.3	9.9	39.9	61.1	57.9	68.5	21.5	21.5
12	26.5	19.8	4.6	.7	3.5	4.9	43.8	61.1	57.9	1.1	22.9	24.4
13	56.5	3.5	8.5	.4	.7	3.5	33.9	61.1	52.3	1.4	22.9	27.2
14	77.0	1.4	19.8	.4	3.5	18.7	39.6	57.2	48.0	1.1	26.1	27.2
15	80.9	6.4	9.5	.4	4.9	50.5	33.9	54.7	48.0	0	28.2	25.8
16	73.1	11.3	2.1	.4	7.8	55.1	41.0	52.3	45.9	0	28.2	25.8
17	73.1	33.2	4.9	.4	15.9	53.0	27.2	52.3	43.8	11.7	29.7	25.8
18	73.1	56.5	10.6	.4	63.2	50.9	19.4	54.7	43.8	8.8	24.4	25.8
19	77.0	56.5	3.5	.4	15.9	46.6	24.7	52.3	48.0	12.7	25.8	25.8
20	80.9	23.3	.7	3.5	15.9	32.1	31.4	52.3	52.3	13.8	27.2	25.8
21	96.1	2.1	.7	1.4	20.5	.7	36.0	61.4	54.4	17.7	25.8	24.4
22	68.9	2.1	.7	4.2	13.4	0	33.6	52.3	48.0	20.5	21.5	27.2
23	62.9	3.5	.4	2.5	17.3	0	33.9	50.5	56.9	17.0	24.4	27.2
24	62.9	3.5	.4	4.6	158	0	45.2	50.5	60.0	25.1	25.8	27.2
25	62.9	11.3	.4	1.4	689	0	44.5	52.3	62.9	26.5	25.8	25.8
26	56.5	15.2	.4	0	1,700	0	49.5	52.3	66.0	17.0	24.4	21.5
27	38.1	9.9	.4	0	2,670	0	50.9	57.2	66.0	17.0	25.8	21.5
28	38.1	7.8	.4	1,740	7,380	0	52.6	57.2	66.0	19.4	27.2	24.4
29	38.1	.4	10,420	6,990	0	52.6	61.4	66.0	19.4	25.8	21.5	
30	31.1	.4	6,500	3,370	0	52.6	86.9	66.0	19.4	22.9	23.0	
31	44.1	.4	657	54.7	98.5					20.5		21.5
Sum	534.5	18,717.5	3,955.3	1,005.8	1,838.9	874.5	758.5					
	1,514.5	171.1	25,782.5	1,005.8	1,974.3	723.4						

Current Year 1957

Month	Extreme Gage Feet			Extreme Second-Feet		Average Second-Feet	Total Acre-Feet	Acre-Feet				
	High		Low	High				Average	Maximum	Minimum		
	High	Low		Day	Day							
Jan.	.36	.20	21	119	4	19.4	48.9	3,000	77,447	166,200		
Feb.	.07	.49	†18	56.5	14	1.4	19.1	1,060	57,585	114,100		
Mar.	-	.16	.64	14	19.8	†23	.4	339	66,306	108,500		
Apr.	13.39	-	29	11,700	126	0	624	37,130	69,365	155,700		
May	11.86	-.33	28	8,550	13	.7	832	51,140	122,122	202,400		
June	6.33	-	3	3,360	122	0	132	7,850	106,850	214,900		
July	.28	-	31	54.7	† 3	0	32.4	2,000	64,805	252,400		
Aug.	.46	.21	31	98.5	23	50.5	59.3	3,650	73,737	241,200		
Sept.	.48	.13	† 2	102	†17	43.8	65.8	3,920	100,287	468,500		
Oct.	.20	-	11	68.5	†15	0	28.2	1,730	79,502	359,200		
Nov.	-.07	-.23	17	29.7	3	17.0	24.1	1,430	35,138	75,590		
Dec.	-.10	-.16	† 5	27.2	† 4	21.5	24.5	1,500	32,085	83,320		
Yearly	13.39			11,700		0	158	114,749	885,229	1,330,780	629,940	

† And other days

RIO GRANDE FLOODWAY DISCHARGES LOWER RIO GRANDE VALLEY

On the United States Side

When the Rio Grande flow at the Hidalgo-Reynosa International Bridge exceeds an elevation of about 100 feet, a portion of the upstream flood enters the United States floodway system at Mission Inlet and Hackney Lake Inlet. These inlets are located, respectively, approximately 7 miles upstream and 6 miles downstream from the "Below Anzalduas Dam Site" gaging station, which is 12.2 river miles above the international highway bridge between Hidalgo, Texas and Reynosa, Tamaulipas. Floodwater entering the Mission Inlet is measured at the North Floodway Station south of McAllen and floodwater entering the Hackney Lake Inlet is measured at the South Floodway Station south of McAllen. These waters join at a point about 5 miles northeast of Hidalgo and flow eastward in the Main Floodway for about 19 miles to a point approximately 3 miles southwest of Mercedes. Here, the floodway divides, one channel going northeastward through the Arroyo Colorado Floodway to the Gulf of Mexico and the other going to the Gulf via the North Floodway, traveling first northward and then eastward. The Arroyo Colorado Floodway is measured at the U.S. 83 Highway Bridge near Harlingen and the North Floodway flow is measured at the U.S. 77 Highway bridge near Sebastian.

In 1957, there was no flow from the Rio Grande through these floodways.

On the Mexican Side

There are several regular floodways on the Mexican side which divert excess Rio Grande floodwater to the Gulf of Mexico. During 1957, no flow was diverted from the Rio Grande into these floodways, including the Retamal Canal.

RETURN FLOW TO THE RIO GRANDE AT PONIENTE DRAIN
West of Reynosa, Tamaulipas

DESCRIPTION: Water-stage recorder on downstream side of railroad bridge 650 feet below drain heading, and cable with cable car 300 feet farther downstream. This drain branches off the left side of the Anzaldúa Canal 5.16 miles below the canal intake and enters the Rio Grande 1,088.6 river miles below the American Dam at El Paso, Texas. The zero of the gage is 85.83 feet above mean sea level, U.S.C. & G.S. datum.

RECORDS: Based on 75 meter measurements during the year and a continuous record of gage heights. Computations by shifting channel methods. Records available: 1953 through 1957.

REMARKS: Flows passing this station represent that portion of water diverted through Anzaldúa Canal which is not used by Mexico. In 1957, this drain was largely used to by-pass Rio Grande water during the construction of Anzaldúa Dam.

EXTREME FLOWS FROM RECORDS: Max. 0,3,810 second-feet on January 18, 1954. Min. no flow the greater part of the time.

Average Flow in Second-Feet

Daily:	Max. 3,810	Jan. 18, 1954	Min. 0	Frequently
Monthly:	Max. 1,420	Jan. 1954	Min. 0	Frequently
Yearly:	Max. 737	1957	Min. 0	1955

Mean Daily Discharge in Second-Feet 1957 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	345	516	6.0	64.3	.7	925	565	1,420	1,350	844	1,020	329
2	345	604	4.6	66.1	.7	2,580	452	1,160	1,220	798	791	334
3	237	657	2.1	82.6	.7	1,080	431	1,220	1,120	819	788	406
4	162	558	1.4	164	.4	961	618	1,100	1,070	791	1,230	413
5	163	371	.7	245	20.5	890	604	844	809	932	1,520	516
6	167	337	.7	392	144	869	1,050	773	717	1,150	1,230	639
7	255	357	.7	498	101	1,670	1,390	642	611	1,400	1,290	604
8	298	424	.7	512	97.8	1,910	1,410	720	530	1,510	1,530	593
9	252	512	0	340	72.0	1,720	1,530	883	675	1,510	1,300	477
10	225	491	48.4	183	197	1,290	1,730	869	505	1,650	1,400	470
11	341	396	102	123	298	1,300	1,770	879	519	1,210	1,370	537
12	448	360	213	87.6	388	1,310	1,850	795	456	1,050	548	565
13	498	280	345	67.8	498	1,310	1,540	727	484	1,140	45.2	579
14	597	343	396	47.7	558	1,800	1,410	908	703	1,420	.4	749
15	727	572	320	15.9	597	1,870	1,270	780	699	1,810	31.8	989
16	678	689	155	3.5	738	2,080	1,170	717	1,120	2,030	108	1,240
17	579	639	98.9	95.7	1,170	2,110	724	795	1,220	1,750	108	1,210
18	378	360	100	230	1,420	2,040	773	851	1,490	1,380	357	1,290
19	150	195	104	55.1	1,840	675	1,320	1,620	1,080	548	1,430	
20	149	191	102	80.9	1,400	1,330	872	1,300	1,190	929	410	1,400
21	173	191	86.9	64.3	1,710	346	1,190	1,380	816	943	345	1,070
22	269	203	60.7	15.5	2,860	224	1,390	1,470	1,230	996	360	1,030
23	262	128	37.4	153	3,260	406	1,310	1,130	1,660	1,050	241	1,030
24	244	66.4	21.2	382	2,930	502	1,010	795	1,140	1,030	.4	1,190
25	230	71.0	22.6	260	2,690	399	667	982	259	1,060	.4	1,230
26	353	62.9	21.2	144	1,610	431	1,110	1,140	141	773	.4	911
27	473	12.7	27.2	220	1,590	281	1,040	1,580	410	720	55.1	1,120
28	470	7.8	37.4	1,090	1,330	6.0	1,290	1,830	586	901	232	1,290
29	470		41.7	.7	1,300	45.6	1,400	2,020	752	1,050	231	1,280
30	371		56.5	.7	145	494	1,430	2,000	710	1,020	281	1,290
31	357		62.2		1,200		1,520	1,930	1,030			1,480
Sum			9,594.8	5,684.4	29,746.8	34,019.6		34,960	35,776	27,691		
Sum			10,666	2,476.2	35,191			25,812	17,371.7			

Current Year 1957

Month	Extreme Gage Feet			Average Second-Feet		Total Acre-Feet	Period 1953-1957			
	Extreme Second-Feet		Average Second-Feet	Acre-Feet	Acre-Feet		Acre-Feet			
	High	Low	Day	Day	Low		Average	Maximum	Minimum	
Jan.	2.67	.36	15	727	21	137	344	21,160	21,750	87,590
Feb.	2.85	.75	116	780	28	7.8	343	19,030	3,806	19,030
Mar.	1.97	- 1.02	14	533	9	0	79.9	4,910	982	4,910
Apr.	6.73	- 1.05	28	2,750	116	0	189	11,280	3,404	11,280
May	7.46	- 1.05	23	3,300	4	.4	960	59,000	12,044	59,000
June	7.38	- 1.02	2	3,250	128	0	1,130	67,480	13,496	67,480
July	5.35	.46	31	1,950	25	174	1,140	69,800	15,666	69,800
Aug.	5.31	.98	30	2,070	9	28.3	1,130	69,340	16,790	69,340
Sept.	5.09	- 1.12	1	1,940	125	7.1	860	51,200	22,626	61,200
Oct.	5.31	2.03	16	2,090	4	607	1,150	70,960	24,042	70,960
Nov.	4.74	- 1.28	11	1,790	114	.4	579	34,460	15,602	34,460
Dec.	5.54	.92	20	2,170	1	317	893	54,930	27,326	71,280
Yearly	7.46	- 1.28		3,300		0	737	533,550	177,534	533,550

† And other days Ø Mean daily

RIO GRANDE AT PROGRESO BRIDGE, TEXAS

DESCRIPTION: Water-stage recorder on the downstream side of the center pier of the bridge, 2 miles south of Progreso, Texas, .8 mile below Progreso pumping plant, 1,124.4 river miles below American Dam at El Paso, Texas, and 123.8 river miles above the Gulf of Mexico. On October 4, 1956, when the low-flow channel shifted to the left bank, an auxiliary recorder was installed 300 feet above the bridge on the American bank to record such flows. The zero of the gage of both recorders is at 52.56 feet above mean sea level, U.S.C. & G.S. datum.

RECORDS: Based on 81 meter measurements during the year from the bridge, 57 by the Mexican and 24 by the United States Section of this Commission, and a continuous record of gage heights. Computations by shifting channel methods. Records available: December 1, 1952 through August 24, 1953 and December 1, 1953 through December 31, 1957.

REMARKS: Except for diversions, tributary inflows, and drainage returns below Falcón Dam, flow at this station, after August 25, 1953, was controlled largely by releases from Falcón Reservoir, 150 miles upstream. When the Rio Grande flow at Hidalgo-Reynosa International highway bridge exceeds an elevation of about 100 feet, a portion of the upstream river flow finds outlet to the Gulf of Mexico through flood channels which branch from the Rio Grande in both countries within a reach extending 54.0 river miles upstream and 66.5 river miles downstream from this station.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 10,810 second-feet on April 11, 1954, with a gage height of 14.50 feet. Min. no flow several days in June, July, and August 1953.

Average Flow in Second-Feet

Daily:	Max. * 9,960	Apr. 11, 1954	Mtn. 0	Frequently 1953
Monthly:	Max. 2,620	June 1955	Mtn. 5.1	June 1953
Yearly:	Max. 1,270	1954	Mtn. 666	1957

Mean Daily Discharge in Second-Feet 1957 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	233	300	39.6	65.7	5,620	1,720	271	1,070	1,640	516	628	261
2	201	456	33.5	68.9	2,320	1,040	289	957	1,210	484	720	328
3	156	572	30.7	66.4	675	2,580	176	763	900	459	717	257
4	189	632	25.8	74.2	119	2,330	128	894	777	434	650	112
5	185	530	21.9	90.4	20.1	1,250	374	865	759	586	823	223
6	183	303	23.3	181	31.5	685	322	544	590	756	975	434
7	164	231	18.0	271	49.4	664	625	495	505	883	802	530
8	195	279	18.0	410	80.5	1,480	904	399	551	904	805	593
9	221	321	15.5	424	75.9	1,820	787	431	484	897	1,060	593
10	202	448	18.0	241	57.6	1,570	879	540	417	911	1,240	403
11	190	470	15.5	205	139	1,010	989	788	279	1,050	1,430	192
12	180	313	42.0	168	343	957	1,210	819	235	862	1,220	274
13	367	262	128	91.1	353	897	1,260	456	197	904	561	299
14	445	118	197	91.1	470	770	1,190	385	280	893	130	441
15	523	61.8	272	84.4	427	1,220	1,240	519	643	897	21.2	618
16	600	413	336	67.1	456	1,620	854	480	636	1,190	35.7	823
17	561	720	230	38.1	509	1,790	650	392	643	1,380	86.9	957
18	519	618	138	38.5	1,010	1,550	344	608	678	1,140	153	975
19	403	316	123	35.3	1,450	1,540	252	618	900	953	223	1,050
20	239	226	123	32.5	1,380	1,510	281	728	964	950	505	1,100
21	174	258	110	33.5	1,080	1,150	459	766	893	819	413	1,130
22	144	232	87.6	67.1	1,180	459	777	950	826	551	413	876
23	137	207	74.5	53.0	2,000	353	766	1,030	1,200	526	144	925
24	158	202	54.7	30.0	2,310	431	731	795	1,420	569	165	777
25	222	124	40.6	59.0	2,310	530	544	692	1,050	572	50.1	1,080
26	234	92.5	34.6	90.8	2,460	328	347	816	427	667	24.7	1,130
27	260	71.0	36.4	36.7	2,660	351	593	791	149	650	31.4	766
28	413	61.8	54.7	161	3,810	269	759	1,090	252	558	46.6	791
29	364	64.3	4,520	7,200	54.7	1,100	1,300	576	459	171	1,050	
30	353	62.9	8,370	6,250	11.3	1,010	1,510	667	618	242	1,030	
31	329		49.1		3,260	1,020	1,550		607			840
Sum	8,838.1	2,518.2	16,164.8	50,106.0	31,940.0	21,131	24,041	20,748	23,645	20,858		
	8,744											

Current Year 1957

Month	Extreme Gage Feet			Extreme Second-Feet		Average Second-Feet	Total Acre-Feet	Period #Dec. 1952-1957				
	High	Low	Day	High	Low			Average	Acre-Feet			
									Maximum	Minimum		
Jan.	2.59	.92	16	643	22	108	282	17,340	79,092	129,500	17,340	
Feb.	2.89	.38	17	812	28	48.0	316	17,530	47,960	83,210	14,100	
Mar.	1.74	0	16	364	12	14.1	81.2	4,990	49,096	77,520	4,990	
Apr.	12.76	.15	30	8,790	24	27.2	539	32,060	60,946	117,400	32,060	
May	12.73	.36	29	7,700	5	15.9	1,620	99,390	96,338	146,100	20,600	
June	7.32	.20	3	3,140	30	4.6	1,060	63,350	87,483	155,700	305	
July	4.04	.16	15	1,360	1	3.2	682	41,910	31,610	52,580	1,310	
Aug.	4.48	1.74	31	1,620	9	328	776	47,690	38,752	53,820	10,400	
Sept.	4.66	.94	1	1,730	†27	129	692	41,150	39,222	48,150	21,650	
Oct.	4.13	1.85	17	1,420	29	381	763	46,900	33,752	48,690	14,030	
Nov.	4.30	.03	11	1,510	26	4.9	483	28,730	35,157	33,470	18,000	
Dec.	3.74	.75	21	1,220	4	91.1	673	41,370	40,557	65,900	7,370	
Yearly	12.76	0		8,790		3.2	666	482,410	639,965	920,420	482,410	

† And other days * Some months missing * Partly estimated

RIO GRANDE NEAR SAN BENITO, TEXAS

DESCRIPTION: Temporary water-stage recorder, operated during periods of low and medium flow, located on the United States side, 5.6 miles below San Benito pumping plant, 1,151.7 river miles below the American Dam at El Paso, Texas, and 96.5 river miles above the Gulf of Mexico. The zero of the gage is at mean sea level, U.S.C. & G.S. datum.

RECORDS: Based on 48 meter measurements during the year, by wading during low flows, and a continuous record of gage heights. Computations by shifting channel methods. Records available: November 26, 1952 through August 25, 1953 and December 1953 through December 1957.

REMARKS: Except for diversions, tributary inflows, and drainage returns below Falcón Dam, flow at this station, after August 25, 1953, was controlled largely by releases from Falcón Reservoir, 177.3 river miles upstream. When the Rio Grande flow at the Hidalgo-Reynosa international bridge exceeds an elevation of about 100 feet, a portion of the upstream river flow finds outlet to the Gulf of Mexico through flood channels which branch from the Rio Grande in both countries within reach extending from 81.3 river miles upstream to 39.2 river miles downstream from this station.

EXTREME FLOWS FROM RECORDS: Momentary: Max. " 8,040 second-feet on April 11, 1954. Min. no flow occurs frequently.

Average Flow in Second-Feet †

Daily:	Max. " 7,180	April 11, 1954	Min. 0	Frequently
Monthly:	Max. 1,040	June 1954	Min. 39.5	Dec. 1956
Yearly:	Max. 426	1954	Min. 200	1956

Mean Daily Discharge in Second-Feet 1957 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	
1	11.2	107	52.0	2.4	* 4,900	*	902	46.2	77.4	491	94.6	180	76.2
2	30.1	111	28.5	14.9	* 2,480	457	43.7	242	402	57.5	228	64.2	
3	45.6	175	18.9	50.4	* 340	*	765	48.3	329	224	47.4	286	26.4
4	64.4	138	41.1	58.2	35.8	* 1,160	26.5	346	109	41.8	208	15.3	
5	87.7	152	46.3	59.0	16.7	238	12.2	446	190	38.2	120	5.8	
6	71.0	277	43.1	31.5	9.3	197	47.4	208	203	90.4	213	4.4	
7	69.5	202	26.8	2.2	8.6	109	39.2	74.3	115	208	143	114	
8	97.4	103	6.4	16.1	6.9	141	62.6	95.1	128	156	68.1	297	
9	120	77.0	7.2	67.7	8.7	427	54.2	68.3	192	228	100	318	
10	123	71.5	11.6	74.0	55.0	545	42.5	55.0	136	362	443	211	
11	69.0	81.7	4.7	49.4	68.0	219	52.8	55.0	91.6	442	602	114	
12	16.7	86.8	8.6	36.2	89.6	273	85.2	162	41.4	334	566	33.6	
13	15.1	78.6	6.8	19.3	215	159	95.6	64.5	9.5	306	53.5	28.7	
14	102	56.3	18.8	5.5	313	165	110	47.0	18.6	289	14.1	36.6	
15	112	46.1	7.2	7.1	451	125	265	37.0	14.0	188	10.8	204	
16	155	34.6	36.7	46.1	246	445	416	22.7	50.6	263	10.8	89.4	
17	238	67.6	77.2	38.4	197	397	206	14.5	44.6	433	9.3	44.1	
18	144	96.6	79.4	7.3	333	233	57.0	16.1	56.3	353	8.1	74.4	
19	35.2	123	78.6	4.0	* 783	282	9.8	36.1	53.2	287	14.2	158	
20	68.4	66.3	78.9	3.8	612	589	6.6	43.6	57.8	435	5.3	304	
21	87.7	38.9	88.6	3.0	518	486	26.3	61.6	90.5	327	50.2	346	
22	17.1	139	85.4	4.8	492	295	48.0	48.0	215	162	62.7	416	
23	10.8	152	68.8	37.4	648	86.0	108	201	165	175	4.3	337	
24	59.7	129	61.7	54.6	* 838	187	70.1	121	186	218	4.0	397	
25	106	169	67.2	51.8	* 751	195	54.5	76.3	225	219	4.5	362	
26	139	147	68.5	49.0	* 778	174	15.2	180	61.3	237	5.0	434	
27	145	75.8	60.6	67.6	* 775	95.4	26.8	311	19.6	388	5.6	231	
28	147	51.4	53.2	79.0	* 1,030	133	48.8	311	10.4	296	5.9	57.6	
29	139	—	33.0	649	* 3,450	104	75.1	290	37.7	175	6.4	242	
30	123	—	22.5	* 4,770	* 5,050	72.3	116	423	250	109	27.2	322	
31	105	—	4.7	—	* 3,310	—	51.1	455	220	—	152	—	
Sum			3,053.2	* 6,359.7	* 28,809.6	9,655.7	4,917.5	7,179.9	5,515.7				
2,754.6			1,293.0			2,366.7	3,888.1	3,459.0					

Current Year 1957 Period #Dec. 1952-1957

Month	Extreme Gage Feet			Extreme Second-Feet		Average Second-Feet	Total	Acre-Feet		
	High	Low	Day	High	Low			Average	Maximum	Minimum
Jan.	34.75	32.75	17	262	13	6.1	88.9	5,460	20,444	37,000
Feb.	35.08	32.90	6	344	21	9.3	109	6,060	13,334	21,500
Mar.	33.68	32.73	21	91.0	3	3.8	41.7	2,560	11,512	15,800
Apr.	46.85	32.60	30	* 5,700	8	.1	* 212	* 12,600	23,680	* 45,400
May	46.33	33.02	30	* 5,310	9	4.6	* 929	* 57,100	30,694	* 57,100
June	38.43	33.59	4	* 1,300	30	64.7	322	19,200	27,771	62,100
July	35.70	32.85	16	500	27	4.5	76.3	4,690	10,923	21,700
Aug.	35.61	32.88	5	484	* 17	4.8	159	9,750	10,362	16,600
Sept.	35.75	32.75	1	513	15	6.0	130	7,710	10,658	15,000
Oct.	35.80	33.18	11	526	5	35.6	232	14,200	12,915	28,000
Nov.	36.50	32.80	12	717	20	3.0	115	6,860	7,660	12,400
Dec.	35.64	32.90	22	488	6	4.0	178	10,900	13,330	28,300
Yearly	46.85	32.60		5,700		.1	217	157,090	193,283	308,540
										145,520

* Estimated * Partly estimated † And other days # Some months missing † Period 1954-1957

RIO GRANDE AT LOWER BROWNSVILLE, TEXAS

DESCRIPTION: Water-stage recorder and cable with stand-up cable car equipped for winch and heavy weights, located 1,000 feet below the El Jardín pumping plant, 6.8 river miles below Brownsville, Texas and Matamoros, Tamaulipas, 48.8 river miles upstream from the Gulf of Mexico, and 1,199.4 river miles below the American Dam at El Paso, Texas. The zero of the gage is at mean sea level, U.S.C. & G.S. datum. An auxiliary water-stage recorder, located 300 feet downstream from this station, was used during periods of low flow. A bubbler-type water-stage recorder, operated with bottled nitrogen gas, was installed on September 12, 1957 replacing the existing stage recording facilities.

RECORDS: Based on 37 meter measurements during the year and a continuous record of gage heights. Computations by shifting channel methods. Records available: January 1934 through December 1957.

REMARKS: Except for diversions, tributary inflows, and drainage returns below Falcón Dam, flow at this station, after August 25, 1953, was controlled largely by releases from Falcón Reservoir, 225 river miles upstream. During floods, when flow at the Hidalgo-Reynosa international highway bridge exceeds an elevation of about 100 feet, a portion of the upstream river flow finds outlet to the Gulf of Mexico through flood channels in both countries within 129 miles above this station.

EXTREME FLOWS FROM RECORDS: The greatest recorded flow since January 1934 was 31,700 second-feet, which occurred October 8, 1945, with a gage height of 31.48 feet. Zero flow occurs frequently.

Average Flow in Second-Feet

Daily:	Max.	30,800	Sept. 14, 1942; Oct. 8, 1945	Min.	0	Frequently
Monthly:	Max.	* 23,200	Oct. 1941	Min.	0	June & July 1953
Yearly:	Max.	9,010	1941	Min.	42.1	1956

Mean Daily Discharge in Second-Feet 1957 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	5.9	4.4	53.0	42.8	* 2,770	* 3,150	117	3.7	12.2	10.4	63.5	9.9
2	4.8	5.2	48.6	37.2	* 3,710	* 1,390	82.6	2.2	23.4	25.5	129	9.7
3	3.6	12.6	48.5	29.0	* 2,680	441	62.8	3.6	51.2	4.8	134	10.5
4	2.7	17.4	45.7	19.3	759	* 440	46.7	4.1	15.0	1.8	113	10.2
5	2.2	27.8	36.2	13.1	32.3	* 738	28.3	4.3	4.0	5.0	64.2	10.3
6	2.5	20.5	27.8	12.7	2.2	* 186	3.7	5.3	3.4	4.5	23.6	11.4
7	2.5	11.5	21.0	12.7	.8	* 131	3.1	5.7	9.0	5.2	4.5	10.7
8	3.6	7.2	20.5	9.8	.7	116	9.3	4.0	43.5	8.6	6.6	10.3
9	3.0	17.8	24.0	8.8	3.5	48.6	6.8	4.0	43.0	15.1	8.1	9.6
10	2.5	12.6	23.5	8.5	4.2	148	6.3	4.2	70.8	11.3	13.8	44.4
11	4.0	13.6	20.6	8.5	*	8.9	263	6.9	4.6	84.4	27.2	10.0
12	8.7	13.6	19.6	7.8	*	4.9	224	2.7	4.0	75.5	4.2	318
13	6.4	7.5	21.0	7.3	*	1.1	139	1.4	3.9	49.6	4.4	367
14	4.0	2.7	22.7	7.3	0	88.3	3.0	4.5	25.2	4.4	109	2.3
15	3.0	2.2	19.9	7.8	0	48.1	7.2	3.3	5.9	4.2	10.5	1.3
16	3.0	11.0	18.5	11.4	.1	35.9	5.0	1.7	3.8	4.2	23.6	1.2
17	5.2	36.3	15.8	11.8	2.1	129	55.0	3.1	2.1	36.2	24.7	1.0
18	5.2	31.4	18.7	11.1	0	223	48.2	4.6	2.9	72.1	17.0	2.5
19	9.1	22.4	21.0	10.7	0	300	9.9	1.8	4.4	51.2	14.2	1.5
20	5.5	19.5	30.5	10.4	62.2	330	5.8	1.7	3.9	11.8	12.7	6.1
21	3.6	19.7	42.4	10.7	75.8	* 618	5.4	2.2	3.2	36.9	15.5	19.7
22	2.5	21.4	53.4	10.4	8.2	* 515	4.8	2.2	3.7	97.0	39.9	7.4
23	2.7	21.7	60.5	9.4	.1	296	5.0	2.2	6.7	26.8	30.7	10.4
24	8.0	22.3	63.6	8.7	1.0	210	5.5	2.4	74.7	54.7	19.9	8.4
25	8.2	30.4	61.2	8.3	27.6	153	10.8	2.5	15.8	38.2	14.8	4.7
26	5.5	32.8	46.9	8.3	50.9	207	5.1	2.2	7.0	10.0	12.4	5.0
27	4.8	32.0	34.3	8.7	96.7	180	3.0	2.7	5.8	13.4	12.5	7.1
28	5.2	54.8	30.3	11.1	132	160	4.1	8.4	3.2	49.2	11.9	12.6
29	4.0		38.5	18.5	343	123	4.2	3.4	2.7	119	11.2	10.0
30	5.2		46.0	59.0	* 1,960	141	2.1	3.4	6.4	108	10.6	6.0
31	5.5		45.4	* 3,500			3.5	3.8	80.6			5.4
Sum		532.3	1,079.6	441.1	* 16,237.3		* 11,171.9	109.7	662.4	921.4	1,713.6	264.2

Current Year 1957							Period 1934-1957		
Month	Extreme Gage Feet		Extreme Second-Feet		Average Second-Feet	Total Acre-Feet	Acre-Feet		
	High	Low	Day	High			Average	Maximum	Minimum
Jan.	6.29	6.05	12	10.1	† 5	1.8	4.6	283	111,383
Feb.	7.22	6.05	28	65.5	14	1.8	19.0	1,060	82,904
Mar.	7.26	6.39	23	66.9	17	14.6	34.8	2,140	74,660
Apr.	11.00	6.20	30	710	†12	7.3	14.7	875	70,603
May	18.56	2	* 3,800	†14	0	* 524	* 32,200	188,284	717,000
June	18.21	6.43	1	* 3,400	†16	33.9	* 372	* 22,200	228,947
July	7.65	5.63	1	136	30	.5	18.2	1,120	202,744
Aug.	6.26	5.63	18	23.4	†16	.7	3.5	218	166,532
Sept.	7.17	5.56	11	107	29	.3	22.1	1,310	392,896
Oct.	7.72	5.55	29	135	† 4	.3	29.7	1,830	1,337,000
Nov.	10.05	5.63	13	470	7	1.3	57.1	3,400	614,000
Dec.	7.05		10	77.8	20	0	8.5	524	98,841
Yearly	18.56			* 3,800		0	* 92.8	* 67,160	2,092,462
									* 6,526,000
									30,596

^a Estimated * Partly estimated † And other days

OUTFALLS FROM WELLS AND SEWERS INTO THE RIO GRANDE
In Acre-Feet

EL PASO ELECTRIC COMPANY SANTA FE STREET PLANT COOLING WATER WASTE

This outfall enters the Rio Grande 3.3 miles below the American Dam. The 1957 record of outfall was obtained from records of water pumped from the company's wells and use of such water by the city of El Paso.

Month	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Yearly
1957	9.2	14.2	8.5	9.9	41.4	44.0	40.0	0	0	0	0	0	167.2
* Average	40.8	38.5	54.1	37.2	67.9	70.8	64.0	49.2	34.3	36.6	27.5	31.5	552.4

EL PASO SEWAGE OUTFALL

This sewage outfall enters the Rio Grande 6.6 river miles below the American Dam. The 1957 record of outfall consists of flows measured by a Parshall meter and estimates by the Department of Water and Sewerage of the city of El Paso of amounts which by-passed the meter, minus estimated diversions between the Sewage Plant and the Rio Grande for irrigation use on 30 acres of land.

Month	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Yearly
1957	1,186	1,147	1,220	1,106	1,176	1,274	1,341	1,354	1,313	1,386	1,272	1,308	15,083
Ø Average	825	773	834	806	870	923	991	977	932	943	877	868	10,619

EL PASO COUNTY WATER CONTROL AND IMPROVEMENT DISTRICT NO. 1 SEWAGE OUTFALLS

This water enters the Rio Grande through the sewer system of the El Paso County Water Control and Improvement District No. 1 between Ascarate and Ysleta, Texas, 9 and 15 miles, respectively, below the American Dam. The tabulation includes the outfalls from Disposal Plant No. 1 at Ascarate, Texas and Disposal Plant No. 2, a few miles downstream. Records were furnished by the El Paso County Water Control and Improvement District No. 1.

Month	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Yearly
1957	137	124	135	150	157	160	167	176	147	152	168	152	1,825
# Average	77.9	73.4	69.8	69.6	67.0	67.6	73.9	80.5	79.7	80.5	82.5	79.9	902.3

LAREDO SEWAGE OUTFALL

This sewage outfall enters the Rio Grande 890.8 river miles below the American Dam at El Paso, Texas and immediately above the Laredo gaging station. The record is based on estimates by the Texas State Health Department.

Month	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Yearly
1957	284	289	333	290	334	327	384	361	308	248	241	259	3,658
# Average	199	208	243	228	243	227	238	232	206	196	206	205	2,631

BROWNSVILLE SEWAGE OUTFALL

This sewage outfall enters the Rio Grande 3.4 river miles below the Gateway Bridge between Brownsville, Texas and Matamoros, Tamaulipas, 3.4 river miles above Lower Brownsville gaging station, and 52.2 river miles above the Gulf of Mexico. During 1957, 297.7 acre-feet of sewage plant effluent were used for irrigation, the remainder entered the Rio Grande as indicated below. Records, which are furnished by the city of Brownsville, were not available for years prior to 1957.

Month	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Yearly
1957	0	122	200	176	180	154	197	222	186	208	237	259	2,141
Average													

* Period 1940-1957, some years missing Ø Period 1936-1957 * Period 1950-1957

STORED WATER IN LARGE RESERVOIRS OF THE RIO GRANDE BASIN
In Thousands of Acre-Feet

Data are presented below for all storage reservoirs in the Rio Grande basin in the United States and Mexico, that exceed 15,000 acre-feet in capacity, except Bluewater Reservoir in the United States (capacity 43,500 acre-feet) for which records have not been available since 1950, and also for International Falcon Reservoir on the Rio Grande. The monthly figures represent the water in storage on the last day of each month, in thousands of acre-feet. The capacities indicated are at spillway level. Storage figures greater than the capacity indicate that the water surface was above spillway level. The capacity shown below for Elephant Butte Reservoir was determined by the United States Bureau of Reclamation as a result of a silt survey completed in 1957.

The reservoirs and the sources of the data are: Rio Grande, Continental, Santa Maria, Terrace, and Mountain Home from the State of Colorado, Division of Water Resources; Sanchez from the Sanchez Ditch and Reservoir Company; Costilla from the New Mexico Interstate Stream Commission; El Vado from the Middle Rio Grande Conservancy District; Elephant Butte, Caballo, Alamogordo, McMillan, and Avalon from the United States Bureau of Reclamation; Red Bluff from the Red Bluff Water Power Control District; Wilacy from the Wilacy County Water Control and Improvement District No. 1; Boquilla, Colina, and Rosettilla from the Northern Electric Power Company of Mexico, S.A.; Francisco I. Madero, Centenario and San Miguel, Venustiano Carranza, Marte Gómez, Culebrón and Villa Cárdenas, and Palito Blanco from the Ministry of Hydraulic Resources of Mexico; International Falcon Reservoir from the International Boundary and Water Commission.

In the United States

Month	RIO GRANDE (Capacity 51.1)		CONTINENTAL (Capacity 26.7)		SANTA MARIA (Capacity 43.6)		TERRACE (Capacity 17.7)		MOUNTAIN HOME (Capacity 20.1)		
	1957	#Average 1927-1957	1957	#Average 1928-1957	1957	#Average 1928-1957	1957	#Average 1925-1957	1957	#Average 1924-1957	
Jan.	3.8	12.6	"	2.4	4.9	2.6	7.1	.6	2.5	1.8	3.9
Feb.	4.7	13.8	"	2.7	5.2	2.9	7.7	1.1	2.8	2.0	4.3
Mar.	5.5	15.1		3.8	5.6	3.3	8.7	1.5	3.3	2.3	4.6
Apr.	6.1	14.8		3.8	6.0	3.6	10.1	2.5	3.9	3.0	5.3
May	6.1	21.6		1.5	7.9	5.4	14.6	4.8	6.8	4.7	7.5
June	52.1	24.0		9.8	8.6	18.3	17.1	17.7	8.6	12.7	7.7
July	48.7	14.8		12.0	6.5	18.7	11.9	14.1	5.5	13.4	5.6
Aug.	35.6	7.0		9.4	4.5	14.6	5.8	7.9	2.9	9.5	3.5
Sept.	35.7	6.8		9.8	4.6	14.9	5.4	6.5	2.4	7.7	3.0
Oct.	35.7	7.9		9.8	4.4	13.7	5.6	4.1	2.4	7.1	3.1
Nov.	38.1	10.8	"	10.4	4.6	14.0	6.3	1.4	2.0	8.4	3.4
Dec.	39.7	12.2	"	11.0	5.0	14.0	6.8	1.5	2.3	8.4	3.7
Avg.	26.0	13.4		7.2	5.6	10.5	8.9	5.3	3.8	6.8	4.6
Max.	52.1	52.1		12.0	26.7	18.7	42.1	17.7	17.7	13.4	16.4
Min.	3.8	0		1.5	0	2.6	0	.6	0	1.8	0

Month	SANCHEZ (Capacity 103.2)		COSTILLA (Capacity 15.7)		EL VADO (Capacity 200.3)		ELEPHANT BUTTE (Capacity 2,206.8)		CABALLO (Capacity 346.0)		
	1957	#Average 1927-1957	1957	#Average 1922-1957	1957	Average 1935-1957	1957	Average 1915-1957	1957	#Average 1938-1957	
Jan.	3.8	10.1	"	1.0	4.0	.5	47.0	47.3	866.0	7.8	141.8
Feb.	4.3	10.4	"	1.6	4.3	.7	41.9	68.4	868.0	8.7	157.5
Mar.	4.9	11.1	"	2.3	4.9	1.3	39.1	64.3	855.0	4.2	141.5
Apr.	6.1	12.8		3.1	6.0	50.7	87.6	50.2	855.0	3.3	117.4
May	10.7	17.7		5.3	8.4	166.0	144.0	161.0	973.0	4.7	108.9
June	26.8	17.5		12.2	7.9	100.0	130.0	267.0	1,020.0	9.2	89.5
July	31.5	12.5		12.2	5.1	56.8	102.0	381.0	967.6	19.6	66.2
Aug.	34.0	9.6		10.4	3.4	18.4	73.6	509.0	907.1	21.5	35.2
Sept.	34.8	9.7		6.5	2.8	16.6	57.9	556.0	871.0	3.9	28.0
Oct.	34.4	10.3		7.0	3.1	.6	52.2	636.0	865.1	9.9	50.8
Nov.	31.5	10.4	"	7.5	3.4	.5	46.5	732.0	867.1	11.7	75.4
Dec.	31.5	10.7	"	8.0	3.8	.5	44.9	776.0	873.5	13.6	101.1
Avg.	21.2	11.9		6.4	4.8	34.4	72.2	354.0	899.0	9.8	92.8
Max.	34.8	62.4		12.2	15.1	166.0	203.5	776.1	2,302.8	24.9	346.6
Min.	3.8	0		1.0	0	.5	0	73.1	2.6	.1	

" Estimated * Some months missing # Daily extreme

STORED WATER IN LARGE RESERVOIRS OF THE RIO GRANDE BASIN

In Thousands of Acre-Feet

In the United States

Month	ALAMOGORDO (Capacity 122.0)		McMILLAN and AVALON (Capacity 38.0)		RED BLUFF (Capacity 310.0)		WILLACY (Capacity 25.0)		TOTAL IN U.S. RESERVOIRS ** (Capacity 3,526.2)	
	1957	#Average 1937-1957	1957	#Average 1908-1957	1957	#Average 1936-1957	1957	#Average 1939-1957	1957	Estimated Average
Jan.	10.2	58.7	12.9	28.3	28.4	111.7	5.0	13.2	128.1	1,311.8
Feb.	15.7	62.8	13.5	28.6	12.8	113.8	1.8	12.3	140.9	1,333.4
Mar.	4.5	54.4	20.2	26.7	15.5	110.8	1.4	12.0	135.0	1,292.8
Apr.	6.2	43.7	5.2	18.2	16.4	92.4	1.4	11.1	161.6	1,284.3
May	10.5	53.2	7.4	21.3	19.0	99.6	9.5	12.0	416.6	1,496.5
June	18.8	46.0	3.8	20.1	18.7	104.8	15.1	12.6	582.2	1,514.4
July	9.7	47.9	4.3	17.9	18.9	90.5	8.4	12.4	649.3	1,366.4
Aug.	50.8	48.6	12.7	16.2	27.0	77.1	1.0	11.0	761.8	1,205.5
Sept.	55.0	46.8	9.1	18.4	17.2	79.0	1.1	13.3	774.8	1,152.1
Oct.	89.9	53.2	11.7	21.4	22.1	93.4	.5	13.3	882.5	1,186.2
Nov.	97.0	53.1	14.2	22.9	25.2	97.4	16.8	13.4	1,008.7	1,216.7
Dec.	101.0	57.5	15.9	26.5	28.2	102.7	7.8	13.4	1,057.1	1,264.1
Avg.	39.1	52.2	10.9	22.2	20.8	97.8	5.8	12.5	558.2	1,302.0
Max.	101.0	156.3	20.2	85.5	28.4	327.5	16.8	22.0	1,057.1	
Min.	4.5	.4	3.8	0	12.8	10.0	.5	0	128.1	

In Mexico

Month	BOQUILLA (Capacity 2,417.5)		LA COLINA (Capacity 19.5)		ROSETILLA (Capacity 15.4)		FRANCISCO I. MADERO (Capacity 344.6)		CENTENARIO and SAN MIGUEL (Capacity 19.9)	
	1957	#Average 1914-1957	1957	Average 1940-1957	1957	Average 1940-1957	1957	#Average 1948-1957	1957	Average 1934-1957
Jan.	928.1	1,373.5	19.1	17.9	9.1	13.5	114.9	174.5	5.4	11.9
Feb.	909.8	1,343.8	19.1	18.2	5.9	13.9	113.0	174.7	4.7	11.4
Mar.	855.9	1,295.4	19.0	17.8	9.0	13.5	112.8	171.1	3.5	8.3
Apr.	762.6	1,229.5	20.4	18.4	10.5	12.9	91.6	148.5	6.5	7.0
May	677.8	1,173.4	19.8	18.5	14.0	11.7	84.3	131.1	9.6	8.1
June	583.0	1,091.7	18.7	18.3	10.8	12.5	57.4	110.7	10.1	7.6
July	525.5	1,129.4	20.4	18.5	13.5	12.7	48.5	119.4	9.3	7.4
Aug.	561.2	1,288.1	20.4	18.1	10.5	12.6	70.6	133.4	7.3	7.9
Sept.	547.3	1,429.3	14.2	17.9	5.1	13.0	71.6	155.5	7.9	10.0
Oct.	542.0	1,426.2	18.6	18.1	2.8	13.0	75.2	165.9	9.8	12.0
Nov.	537.0	1,391.1	18.8	17.8	2.1	12.5	74.3	165.5	11.3	11.7
Dec.	535.2	1,374.0	18.8	17.6	3.4	13.4	75.5	164.7	10.9	11.4
Avg.	663.8	1,295.4	18.9	18.1	8.1	12.9	82.5	151.2	8.0	9.6
Max.	928.1	2,224.5	20.4	20.4	14.0	19.4	114.9	342.9	11.3	20.7
Min.	525.5	16.9	14.2	13.5	2.1	.4	48.5	1.4	3.5	0

Month	VENUSTIANO CARRANZA (Capacity 1,123.0)		MARTE R. GOMEZ (Capacity 1,019.1)		CULEBRON and VILLA CARDENAS (Capacity 90.0)		PALITO BLANCO (Capacity 124.0)		TOTAL IN MEXICAN RESERVOIRS (Capacity 5,173.0)	
	1957	Average 1930-1957	1957	#Average 1943-1957	1957	#Average 1939-1957	1957	Average 1942-1957	1957	Estimated Average
Jan.	3.9	340.0	163.3	497.3	4.5	40.1	5.9	38.9	1,254.2	2,507.6
Feb.	3.1	324.5	123.1	439.8	13.4	36.2	6.6	29.5	1,198.7	2,392.0
Mar.	3.1	305.2	164.0	393.3	21.0	31.1	7.1	31.4	1,195.4	2,267.1
Apr.	11.2	295.0	433.7	393.3	21.7	31.5	8.7	28.4	1,366.9	2,164.5
May	109.6	288.2	505.1	378.7	32.9	35.0	20.1	23.4	1,473.2	2,068.1
June	98.3	280.0	565.1	342.8	49.5	44.3	36.6	25.0	1,429.5	1,932.9
July	82.9	271.6	521.3	320.6	30.9	40.0	23.3	30.5	1,275.6	1,950.1
Aug.	73.4	274.8	461.3	411.1	30.4	41.3	19.8	30.5	1,254.9	2,217.8
Sept.	71.6	319.0	432.9	491.1	25.7	52.1	14.0	44.6	1,190.3	2,532.5
Oct.	69.1	337.0	460.5	533.9	17.6	57.0	15.3	55.9	1,210.9	2,619.0
Nov.	66.7	345.0	458.1	528.8	44.8	49.9	22.9	54.6	1,236.0	2,576.9
Dec.	64.8	345.4	457.2	528.1	68.3	53.5	26.5	51.8	1,260.6	2,559.9
Avg.	54.8	310.5	395.5	438.2	30.1	42.7	17.2	37.0	1,278.8	
Max.	109.6	1,163.4	565.1	991.5	68.3	116.8	36.6	140.1	1,473.2	
Min.	3.1	* 1.0	123.1	† 17.8	4.5	0	5.9	0	1,190.3	

Some months missing * Minimum since full reservoir in 1932. ** Excludes Bluewater Reservoir † Minimum since full reservoir in 1947.

STORED WATER IN LARGE RESERVOIRS OF THE RIO GRANDE BASIN

International Falcón Reservoir

Falcón Dam is the lowermost of the major international storage dams authorized for construction on the Rio Grande by the Water Treaty of 1944 between the United States and Mexico and was the first dam constructed. It is located 84.5 river miles downstream from Laredo, Texas and Nuevo Laredo, Tamaulipas, 114.9 river miles upstream from Hidalgo, Texas and Reynosa, Tamaulipas, 974.4 river miles below the American Dam, and 273.8 river miles above the Gulf of Mexico.

Falcón Dam and Reservoir serve to control and regulate floods and other flows of the Rio Grande for domestic and irrigation uses downstream in the two countries, and serve incidental purposes, including the generation of hydroelectric energy at two identical power plants, one on each side of the river immediately below the dam. In the course of construction of Falcón Dam, the flow of the Rio Grande was diverted through the temporary outlets on December 29, 1952. These outlets were closed and permanent storage began on August 25, 1953, although some small storage occurred prior to that time when the flow of the river exceeded the capacity of the temporary outlets.

The stored water belonging to each country is based on their respective river and tributary flows, consumptive uses, and losses, as specified in the Water Treaty. The capacities and stored water reported below are based on a capacity survey completed in February 1954. Deduced inflows and daily storages for International Falcón Reservoir are reported on pages 105 and 106 in this water bulletin.

Storage Capacities

Elevation	Description	At Indicated Elevation		Between Indicated Elevations	
		Reservoir Capacity Acre-Feet	Reservoir Area Acres	Storage Volume Acre-Feet	Type of Storage
175.0	River Bed at Dam Axis	0	0	16,455	Silt and Dead
204.34	Lowest Outlet (Mexican Penstock)	16,455	1,449	2,424,073	Silt and Conservation
296.4	Top of Conservation Storage	2,440,528	78,451	908,759	Ordinary Flood
306.7	Top of Spillway Gates	3,349,287	98,805	801,684	Super Flood
314.2	Maximum Water Surface	4,150,971	115,581		

During the winter months, 400,000 acre-feet of the flood control capacity may be utilized for additional conservation storage.

Water-Surface Elevations and Stored Water

Water-Surface Elevations in Feet Above Mean Sea Level, U.S.C. & G.S. Datum

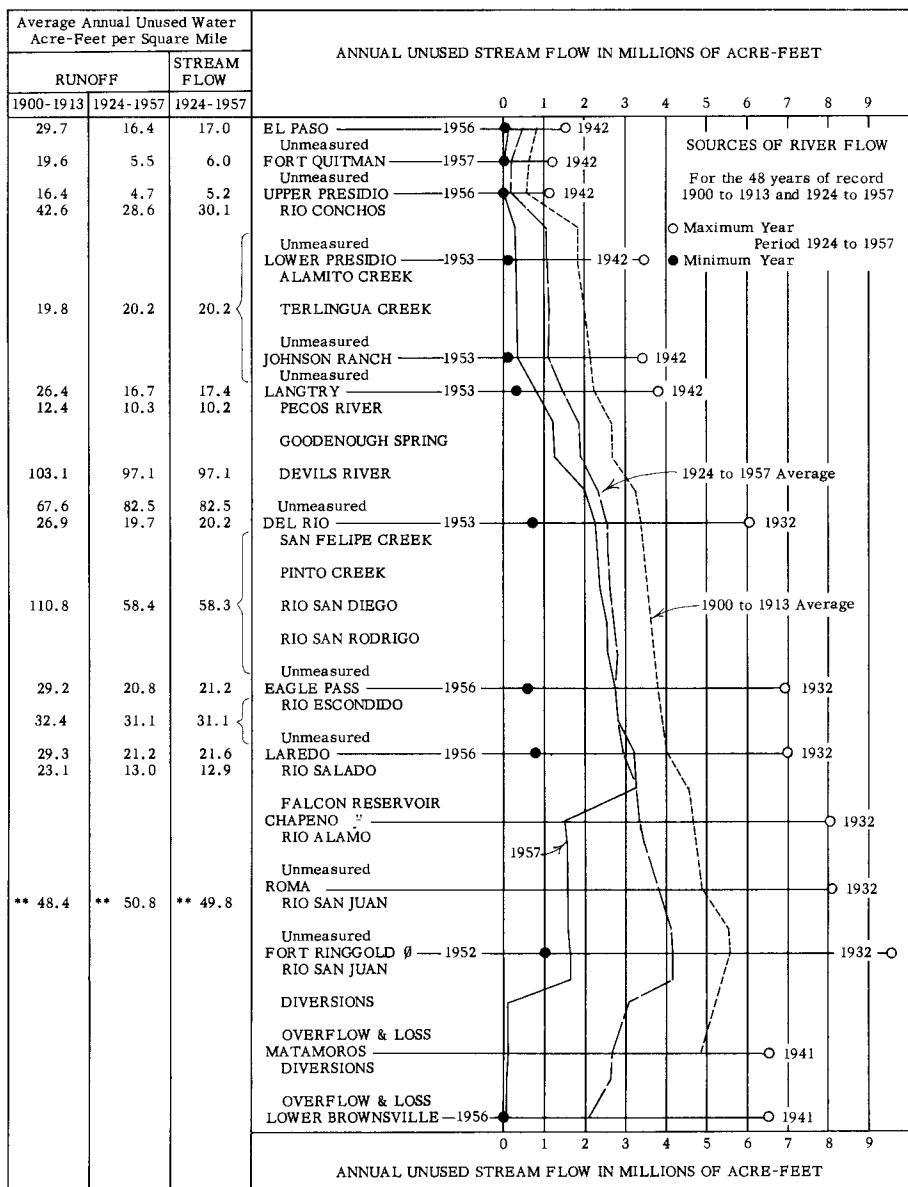
Storage in Thousands of Acre-Feet

Month	LAST DAY OF MONTH AT MIDNIGHT	MONTHLY							
		Average Storage		Maximum			Minimum		
1957	Elevation	Storage	1957	1953-1957	Day	Elevation	Storage	Day	Elevation
*Dec.	246.36	274.8							
Jan.	236.92	160.0	218.7	933.3	1	246.36	274.8	31	236.92
Feb.	239.43	185.1	156.2	766.8	28	239.43	185.1	16	235.10
Mar.	245.34	259.4	226.7	668.6	31	245.34	259.4	1	239.43
Apr.	262.88	661.1	325.6	594.7	30	262.88	661.1	2	245.26
May	286.68	1,757.3	1,122.5	686.9	31	286.68	1,757.3	1	262.88
June	290.01	1,973.9	1,938.0	718.4	127	290.01	1,973.9	1	286.68
July	288.34	1,863.1	1,918.2	992.7	1	290.01	1,973.9	31	288.34
Aug.	285.75	1,699.9	1,798.6	1,014.9	1	288.34	1,863.1	31	285.75
Sept.	286.30	1,733.7	1,654.8	1,253.8	30	286.30	1,733.7	22	284.02
Oct.	286.59	1,751.7	1,734.2	1,381.5	25	286.83	1,766.7	16	285.82
Nov.	287.22	1,791.3	1,780.2	1,434.1	21	287.38	1,801.4	† 1	286.59
Dec.	286.81	1,765.5	1,787.7	1,401.9	†15	287.34	1,798.9	30	286.80
YEAR	1957	1,228.3			290.01	1,973.9		235.10	143.5
PERIOD	1953 - 1957		989.0		296.18	# 2,423.3		235.10	†Ø 143.5

* December 1956. † And other days. ‡ Since September 1, 1953. # Maximum occurred November 14, 1954.
Ø Minimum occurred February 16, 1957.

SOURCES OF RIVER FLOW

The graph and the column of figures on this page represent data on the annual yield of drainage areas tributary to various stream-gaging stations in the Rio Grande watershed. The graphic values are for the entire tributary area, while the column figures are reduced to the yield from one average square mile of the tributary area. There were no reservoirs of consequence on the area from 1900 to 1913; therefore, the figures in the first column correspond to those for that period in the graph. Because more than 10,000,000 acre-feet of reservoir capacity have been developed on the watershed since 1913, in which large volumes of unused runoff are stored in some years and released in later years as unused stream flow (thus reducing the unused stream flow in some years and adding thereto in others), it is significant to differentiate between the unused runoff and unused stream flow.



^a Values prior to 1953 considered the same as for Zapata gaging station. ^b Values prior to 1955 considered the same as for Rio Grande City gaging station. ^{**} Includes contributions of the Río San Juan entering the Río Grande above and below Rio Grande City.

RIO GRANDE DRAINAGE BASIN

SAN MARCIAL, NEW MEXICO
TO THE GULF OF MEXICO

—LEGEND

- Stream Gaging Station
- Rainfall Station
- ↔ Watershed Boundary
- Closed Basin

Note : Evaporation stations located at or near underlined names

INDEX MAP

INDEX MA



**DIVERSIONS FROM THE RIO GRANDE
AMERICAN CANAL AT EL PASO, TEXAS**

DESCRIPTION: An open channel rating station in a concrete-lined canal with a water-stage recorder, located 2,350 feet below the headgates at the American Dam near El Paso, Texas. Measurements are made at the downstream end of the first covered section of this canal, 835 feet below the recorder. The zero of the gage is 3,712.09 feet above mean sea level, U.S.C. & G.S. datum.

RECORDS: Based on 15 meter measurements during the year, a stable rating curve at medium and high flows, and a continuous record of gage heights. After May 7, 1954, computations for flows below gage height 2.80 feet (discharge approximately 30 second-feet) are based on auxiliary recorder, 400 feet below headgates. Records available: June 2, 1938 through December 1957.

REMARKS: This canal diverts water from the Rio Grande at the American Dam near El Paso, Texas, 2.1 river miles above the International Dam near Juárez, Chihuahua. Water from this canal discharges into the Franklin Canal from which water is frequently returned to the Rio Grande at spillways 2.2, 2.7, and 3.6 river miles below the American Dam.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 1,840 second-feet on March 27, 1944. Min. frequently no flow.

Average Flow in Second-Feet

Daily:	Max. 1,510	Avg. 13, 1945	Min. 0	Frequently
Monthly:	Max. 1,210	Aug. 1943	Min. 0	Frequently since 1952
Yearly:	Max. 748	1943	Min. 65.3	1956

Mean Daily Discharge in Second-Feet 1957 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0	0	0	143	74.3	2.0	323	580	638	24.6	11.5	0
2	0	0	0	114	69.7	2.0	348	389	414	19.6	11.0	0
3	0	0	0	137	18.2	2.0	334	579	368	17.9	11.0	0
4	0	0	0	93.8	3.0	2.0	346	573	275	16.3	10.2	0
5	0	0	0	96.2	3.0	2.0	349	561	349	17.0	11.0	0
6	0	0	0	116	3.0	2.0	354	565	358	27.2	11.3	0
7	0	0	0	110	5.5	2.0	404	392	275	17.6	11.7	0
8	0	0	0	112	5.0	2.0	443	421	309	13.5	11.6	0
9	0	0	0	79.1	5.0	56.8	406	212	283	12.3	11.8	0
10	0	0	0	55.0	5.0	246	418	367	238	12.3	11.7	0
11	0	0	0	54.0	4.7	254	465	389	133	17.0	11.7	0
12	0	0	0	54.3	5.0	244	615	527	129	18.7	11.3	0
13	0	0	0	107	4.5	243	694	575	253	177	9.8	0
14	0	0	0	201	4.2	250	741	555	232	205	8.0	0
15	0	0	0	148	3.6	272	702	588	476	86.5	7.1	0
16	0	0	0	93.9	3.8	324	472	836	805	48.2	6.4	0
17	0	0	0	89.7	3.9	276	332	663	675	25.2	8.4	0
18	0	0	0	61.8	4.2	282	290	732	640	15.0	8.0	0
19	0	0	0	50.0	4.0	330	262	1,010	604	13.5	8.1	0
20	0	0	0	89.7	3.8	484	473	513	621	14.0	3.3	0
21	0	0	" 1.0	79.5	4.1	522	551	539	527	150	0	0
22	0	0	" 2.0	97.4	3.0	433	428	630	445	51.2	0	0
23	0	0	" 2.0	19.8	2.5	387	447	594	514	59.7	0	0
24	0	0	" 2.0	9.8	2.5	307	423	705	621	38.2	0	0
25	0	0	" 6.5	86.1	2.0	201	636	549	312	17.8	0	0
26	0	0	184	4.8	2.5	207	1,010	502	174	13.0	0	0
27	0	0	143	4.1	2.5	167	361	607	* 90.1	11.1	0	0
28	0	0	137	4.6	2.0	135	294	213	65.8	10.7	0	0
29	0	0	120	4.8	2.0	131	184	298	51.4	11.1	0	0
30	0	0	80.4	63.8	2.0	145	267	539	27.9	11.5	0	0
31	0	0	101	" 2.0	" 2.0	326	799	799	11.5	0	0	0
Sum	0	0	2,300.6	5,912.8			17,002	1,184.2		0		
	0	858.5	260.5	13,698			10,903.2	194.9				

Current Year 1957

Month	Extreme Gage Feet			Extreme Second-Feet		Average Second-Feet	Total Acre-Feet	Period June 1938-1957			
	High		Day	High	Low			Average	Maximum	Minimum	
	High	Low	Day	Day	Day			Acre-Feet			
Jan.			0	0	0	0	0	1,398	8,110	0	
Feb.			0	0	0	0	0	6,898	19,500	0	
Mar.	4.71		26	195	† 1	0	27.7	1,700	28,075	50,100	
Apr.	5.43	3.54	15	293	28	3.5	76.7	4,560	41,397	70,900	
May	3.75		1	92.2	†25	2.0	8.4	517	33,932	69,000	
June	7.09		21	573	† 1	2.0	197	11,700	41,008	65,700	
July	9.36	3.91	25	1,150	29	106	442	27,200	47,967	70,700	
Aug.	10.10	4.28	19	1,400	8	143	548	33,700	48,552	74,600	
Sept.	8.76		1	977	30	23.6	363	21,600	32,936	63,100	
Oct.	5.34		13	281	†27	9.3	38.2	2,350	15,718	39,100	
Nov.			12	15.3	†20	0	6.5	387	8,954	21,000	
Dec.			0	0	0	0	0	9,336	25,500	0	
Yearly				1,400		0	143	103,714	316,171	541,610	47,397.4

^u Estimated * Partly estimated † And other days

DIVERSIONS FROM THE RIO GRANDE
ACEQUIA MADRE NEAR JUAREZ, CHIHUAHUA

DESCRIPTION: Water-stage recorder and bridge for meter measurements, located about 260 feet below the canal intake at the International Dam at Juárez, Chihuahua, which is 2.1 river miles below the American Dam at El Paso, Texas.

RECORDS: Based on 88 meter measurements during the year, 45 by the Mexican and 43 by the United States Section of this Commission, and a continuous record of gage heights. Computations by shifting channel methods. Records available: 1938 through December 1957. These records, showing the water actually diverted by Mexico, do not necessarily reflect the quantities of water made available to Mexico in the bed of the river by the United States under terms of the Convention of 1906. Such quantities of water are included in the record of "Rio Grande below American Dam," see page 8 in this water bulletin.

REMARKS: In 1957, all of the 23,290 acre-feet tabulated below were distributed to land irrigated in the first unit under the canal.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 480 second-feet on July 21, 1944, with a gage height of 6.00 feet. Min. no flow through the winter months.

Average Flow in Second-Feet

Daily:	Max. 339	May 10, 1942	Mtn. 0	Several months each year
Monthly:	Max. 283	May 1938	Min. 0	Several months each year
Yearly:	Max. 116	1942	Min. 10.8	1956

Mean Daily Discharge in Second-Feet 1957 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0	0	0	0	0	0	0	0	177	0	0	0
2	0	0	0	0	0	0	0	0	167	0	0	0
3	0	0	0	0	0	0	0	0	176	0	0	0
4	0	0	0	0	0	0	0	0	178	0	0	0
5	0	0	0	0	0	0	0	91.8	185	0	0	0
6	0	0	0	0	0	0	0	152	169	0	0	0
7	0	0	0	0	0	0	0	152	177	0	0	0
8	0	0	0	0	0	0	0	152	177	0	0	0
9	0	0	0	0	0	0	0	152	177	0	0	0
10	0	0	0	0	0	0	0	127	177	0	0	0
11	0	0	0	0	0	0	0	105	177	0	0	0
12	0	0	0	0	0	0	108	105	176	0	0	0
13	0	0	0	0	0	0	140	106	176	0	0	0
14	0	0	0	0	0	0	140	102	177	0	0	0
15	0	0	0	102	0	103	135	106	132	0	0	0
16	0	0	0	144	0	140	143	110	0	0	0	0
17	0	0	0	139	0	139	141	110	0	0	0	0
18	0	0	0	142	0	138	166	109	0	0	0	0
19	0	0	0	148	0	145	177	108	0	0	0	0
20	0	0	0	141	0	143	182	177	0	0	0	0
21	0	0	0	143	0	139	180	163	0	0	0	0
22	0	0	0	57.9	0	143	190	171	0	0	0	0
23	0	0	0	0	0	143	174	174	0	0	0	0
24	0	0	0	0	0	65.7	177	178	0	0	0	0
25	0	0	0	0	0	0	180	176	0	0	0	0
26	0	0	0	0	0	0	177	176	0	0	0	0
27	0	0	0	0	0	0	177	186	0	0	0	0
28	0	0	0	0	0	0	185	174	0	0	0	0
29	0	0	0	0	0	0	153	182	0	0	0	0
30	0	0	0	0	0	0	0	180	0	0	0	0
31	0	0	0	0	0	0	0	177	0	0	0	0
Sum	0	0	1,016.9	0	1,298.7	2,925	3,901.8	2,598	0	0	0	0

Current Year 1957

Period 1938-1957

Month	Average Rainfall Inches **		Extreme Second-Feet		Average Second- Feet	Total Acre-Feet	Acre-Feet		
	1938-1957	1957	Day	High			Average	Maximum	Minimum
				Day	Day	Day	Day	Day	Day
Jan.	.40	.11	0	0	0	0	0	0	0
Feb.	.26	.81	0	0	0	0	0	0	0
Mar.	.23	.15	0	0	0	0	1,184	5,540	0
Apr.	.20	.07	16	158	† 1	0	33.9	2,020	6,073
May	.43	.59	T	15	147	† 1	0	10,188	11,720
June	.69	1.22	20	190	† 1	0	43.3	2,580	8,231
July	1.58	1.22	20	190	† 1	0	94.4	5,800	8,443
Aug.	1.43	2.27	27	192	† 1	0	126	7,740	15,170
Sept.	.88	.36	† 3	188	† 16	0	86.6	5,150	6,090
Oct.	.83	1.62	0	0	0	0	0	77.2	328
Nov.	.23	.37	0	0	0	0	0	0	0
Dec.	.45	.03	0	0	0	0	0	0	0
Yearly	7.61	7.60	192	0	32.2	23,290	48,621.2	83,930	7,864

† And other days ** Average for valley floor from El Paso to Island Station.

DIVERSIONS FROM THE RIO GRANDE

MAVERICK CANAL AT MILE 13

NEAR QUEMADO, TEXAS

DESCRIPTION: For power generation and irrigation use, water is diverted into the main Maverick Canal from the Rio Grande at a point 17.3 river miles below the international bridge between Del Rio, Texas and Cd. Acuña, Coahuila and 710.8 river miles below the American Dam at El Paso, Texas. At a point 31.8 canal miles below the headworks of this canal, a portion of the diverted water returns to the river through the Maverick Power Plant and the remainder enters the Maverick Canal extension. The discharges shown below are based on the continuous record of a bubbler-type water-stage recorder, operated with bottled nitrogen gas, and measurements of discharge at a point approximately 13 canal miles below the diversion point. Gage heights at this station are often affected by gate operation at Las Moras Siphon, 2.4 miles downstream.

RECORDS: Based on 93 meter measurements during the year and a continuous record of gage heights. Computations by shifting channel methods. Records available: June 21, 1949 through December 1957.

REMARKS: In 1957, a total of 34,425 acres of land was irrigated from this canal and its extension. Of this total, 9,415 acres were between this point and the canal extension, and 25,010 acres were irrigated from the Maverick Canal extension. A total of 536,800 acre-feet of water returned to the Rio Grande at the power plant and some returned through the irrigation system.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 1,650 second-feet on May 27, 1952. Min. no flow several days in June, July, and November 1954.

Average Flow in Second-Feet

Daily:	Max.	1,620	July 13, 1952	Min.	0	June 28 through July 11 & Nov. 2, 1954
Monthly:	Max.	* 1,530	July 1952	Min.	" 319	July 1954
Yearly:	Max.	1,390	1950	Min.	914	1956

Mean Daily Discharge in Second-Feet 1957 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	968	1,060	1,110	1,030	985	1,080	1,140	1,140	1,120	1,160	1,270	1,210
2	964	1,050	1,110	959	974	1,020	1,140	1,130	1,110	1,160	1,270	1,220
3	968	1,050	1,120	884	1,000	1,010	1,120	1,110	1,110	1,160	1,270	1,210
4	977	1,050	1,140	859	1,010	1,020	1,120	1,160	1,110	1,140	1,310	1,220
5	996	1,030	1,130	880	1,020	1,040	1,110	1,120	1,170	1,140	1,340	1,220
6	1,000	1,020	1,090	834	1,010	1,090	1,110	1,110	1,260	1,140	1,320	1,220
7	1,020	1,010	1,070	828	989	1,120	1,110	1,120	1,170	1,140	1,280	1,240
8	1,020	1,000	1,070	845	979	1,150	1,100	1,120	1,120	1,110	1,270	1,240
9	1,020	994	1,050	824	1,000	1,160	1,090	1,120	1,120	1,190	1,260	1,240
10	1,010	999	1,040	776	992	1,150	1,090	1,100	1,110	1,280	1,260	1,230
11	1,000	985	1,060	787	1,030	1,140	1,080	1,100	1,120	1,230	1,260	1,220
12	1,020	* 108	1,050	843	1,010	1,110	1,070	1,120	1,130	1,180	1,250	1,230
13	1,040	* 16.0	1,040	1,100	1,020	1,100	1,060	1,150	1,200	1,270	1,240	1,240
14	1,050	* 251	1,020	1,110	998	1,110	1,060	1,130	1,230	1,290	1,240	1,250
15	1,040	* 976	979	1,080	956	1,120	1,040	1,130	1,300	1,300	1,240	1,250
16	1,030	* 1,030	913	* 1,050	974	1,130	1,040	1,140	1,130	1,290	1,250	1,240
17	1,050	1,030	904	1,030	949	1,130	1,040	1,140	1,120	1,300	1,240	1,240
18	1,050	1,050	923	1,000	897	1,120	1,060	1,140	1,120	1,320	1,240	1,230
19	1,010	1,090	934	1,040	885	1,140	1,110	1,150	1,130	1,310	1,230	1,240
20	1,020	1,080	930	1,050	893	1,130	1,110	1,160	1,120	1,290	1,210	1,220
21	1,030	1,090	1,040	1,060	943	1,140	1,130	1,180	1,120	1,250	1,210	1,230
22	1,030	1,100	1,090	* 1,090	974	1,150	1,110	1,170	1,230	1,230	1,220	1,230
23	1,020	1,100	1,040	1,070	985	1,160	1,090	1,180	1,240	1,240	1,220	1,240
24	1,020	1,110	996	1,050	997	1,170	1,100	1,180	1,240	1,280	1,210	1,260
25	1,020	1,110	976	990	994	1,170	1,130	1,190	1,240	1,320	1,210	1,270
26	1,010	1,090	926	923	1,010	1,150	1,150	1,180	1,260	1,340	1,220	1,260
27	1,020	1,120	921	918	* 1,020	1,140	1,130	1,170	1,260	1,310	1,210	1,260
28	1,040	1,110	944	1,020	* 1,030	1,130	1,130	1,160	1,210	1,300	1,210	1,250
29	1,050		902	1,010	* 1,030	1,140	1,140	1,140	1,190	1,290	1,210	1,260
30	1,050		871	1,010	1,030	1,150	1,160	1,130	1,270	1,210	1,210	1,260
31	1,050		965		1,030		1,170	1,130		1,260		1,250
Sum		26,709.0	31,354	28,950	30,614	33,570	34,240	35,400	35,010	38,490	37,380	38,380
31,593												

Current Year 1957

Period July 1949-1957

Month	Extreme Gage			Extreme Second-Feet		Average Second-Feet	Total	Acre-Feet			
	High	Low	Day	High	Low			Average	Maximum	Minimum	
Jan.	3.88	3.54	†17	1,060	3	957	1,020	62,700	71,112	89,500	61,900
Feb.	4.01		27	1,130	†13	* 16.0	954	53,000	62,863	82,500	52,700
Mar.	3.90	2.78	4	1,150	30	844	1,010	62,200	66,825	90,700	52,000
Apr.	4.03	2.26	13	1,130	10	757	965	57,400	59,975	81,000	* 45,400
May	4.40	2.88	16	1,190	20	850	988	60,700	* 65,150	82,200	* 39,400
June	4.60	3.17	†23	1,170	2	909	1,120	66,600	67,025	86,800	34,400
July	4.55	3.91	31	1,180	16	1,030	1,100	67,900	* 65,623	* 93,900	* 19,600
Aug.	4.57	4.14	†24	1,190	†11	1,090	1,140	70,200	* 71,522	88,500	53,000
Sept.	4.83	4.00	†26	1,290	4	1,100	1,170	69,400	70,945	* 84,500	47,000
Oct.	4.88	3.85	26	1,360	8	1,100	1,240	76,300	* 72,511	87,500	* 54,300
Nov.	4.78	4.08	5	1,350	29	1,200	1,250	74,100	68,912	82,800	55,900
Dec.	4.32	4.06	†24	1,270	1	1,200	1,240	76,100	* 71,045	85,600	58,600
Yearly	4.88	2.26		1,360	*	16.0	1,100	796,600	* 813,508	1,004,200	* 663,500

^a Estimated * Partly estimated † And other days

DIVERSIONS FROM THE RIO GRANDE
MAVERICK CANAL EXTENSION BELOW THE POWER PLANT
NEAR EAGLE PASS, TEXAS

DESCRIPTION: The main Maverick Canal divides into two branches at a point about 31.8 canal miles below the point at which water from the Rio Grande is diverted. One branch leads to the Maverick Power Plant and back to the Rio Grande. The other branch forms this Maverick Canal Extension which is used to transmit irrigation water. The water-stage recorder is located at a wooden pile bridge about 1 mile below the heading of this canal extension. Meter measurements are made from the bridge.

RECORDS: Based on 34 meter measurements during the year, 30 by the United States and 4 by the Mexican Section of this Commission, and a continuous record of gage heights. Computations by shifting channel methods. Records available: 1939 through December 1957.

REMARKS: Irrigation from this canal extension began in June 1938. In 1957, 25,010 acres of land north and south of Eagle Pass were irrigated. Some water from this canal extension returns to the river through the irrigation system which extends approximately 67 canal miles downstream.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 549 second-feet on June 28, 1956. Min. occasionally no flow.

Average Flow in Second-Feet

Daily:	Max. 522	June 28, 1956	Min. 0	Occasionally
Monthly:	Max. 448	July 1955	Min. " 18.7	Mar. 1939
Yearly:	Max. 321	1952 & 1956	Min. 62.1	1939

Mean Daily Discharge in Second-Feet 1957 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	262	251	186	295	121	69.2	386	478	324	117	175	170
2	262	271	205	299	117	65.6	369	482	315	118	173	170
3	265	268	201	298	116	65.4	349	460	307	118	170	165
4	269	258	173	306	116	52.7	352	444	298	118	171	167
5	262	247	172	304	118	48.3	351	442	305	120	174	164
6	266	250	169	300	119	78.2	380	444	301	168	174	169
7	259	240	167	307	116	149	422	446	301	207	175	165
8	260	240	174	305	116	183	420	442	302	258	172	167
9	260	246	168	308	117	213	447	442	302	151	172	160
10	257	247	187	310	117	207	464	434	296	68.3	176	164
11	257	260	208	337	116	199	456	431	293	67.4	118	165
12	257	* 98.7	191	352	115	201	448	445	295	66.0	79.6	162
13	257	0	166	348	158	201	451	420	294	68.1	76.1	178
14	254	0	163	313	205	201	451	398	286	65.3	75.8	213
15	252	* 191	163	363	234	201	452	387	285	117	74.3	213
16	247	250	163	357	236	206	449	387	291	209	74.0	214
17	249	228	179	360	157	244	442	370	292	215	73.8	217
18	250	172	217	357	121	266	445	351	288	218	71.7	221
19	247	180	240	171	115	281	448	366	291	215	84.8	230
20	247	184	236	94.0	110	292	442	361	287	212	146	228
21	249	171	243	85.3	129	297	446	365	291	187	175	225
22	252	173	241	86.3	234	298	450	361	232	89.8	177	228
23	251	173	273	83.1	235	298	478	360	153	79.4	176	191
24	249	171	317	80.2	241	294	498	342	142	70.2	174	110
25	248	172	317	187	230	327	498	330	117	69.8	177	63.2
26	252	170	317	197	221	362	488	330	113	66.9	175	62.6
27	252	171	321	155	149	402	479	328	112	117	174	58.9
28	252	167	319	142	106	410	483	326	123	176	170	53.6
29	243		315	114	78.5	388	484	325	119	181	170	53.6
30	242		316	120	77.5	384	471	325	118	179	169	53.6
31	242		313		71.0		477	323		173		107
Sum	5,449.7		7,333.9		6,883.4		12,145		4,285.2		4,908.5	
	7,871		7,020		4,512.0		13,676		7,473		4,343.1	

Current Year 1957

Month	Average Rainfall Inches **		Extreme Second-Feet		Average Second- Feet	Total Acre-Feet	Period 1939-1957		
	1939-1957	1957	Day	Day			Average	Maximum	Minimum
Jan.	.87	.14	4	285	31	210	254	15,600	11,837 2,140
Feb.	.98	1.95	11	295	113	Ø 0	195	10,800	10,704 18,200
Mar.	.78	1.46	30	331	1	152	226	13,900	12,622 22,500
Apr.	1.67	7.51	18	422	24	76.3	244	14,500	12,454 22,200
May	3.19	5.61	16	269	31	68.6	146	8,950	10,852 21,800
June	1.71	.63	27	435	4	43.3	229	13,700	11,873 26,600
July	1.19	T	25	504	30	345	441	27,100	13,515 27,100
Aug.	2.34	.12	2	490	11	303	392	24,100	12,539 24,100
Sept.	2.54	4.32	22	332	27	98.6	249	14,800	10,727 18,300
Oct.	1.56	4.05	9	293	15	54.2	138	8,500	12,248 * 21,800
Nov.	.66	1.57	22	184	19	69.0	145	8,610	12,182 * 20,000
Dec.	.68	1.71	20	254	30	51.3	158	9,740	12,713 20,200
Yearly	18.17	29.07		504	0	235	170,300	144,266	* 233,300 44,950

^u Estimated * Partly estimated † And other days Ø Mean daily ** On United States side from Maverick Power Plant to Cuervo Creek.

DIVERSIONS FROM THE RIO GRANDE
UNITED STATES SIDE BELOW FORT RINGGOLD
RIO GRANDE CITY, TEXAS

The official records show that in 1957 there were in this area 760,900 irrigable acres, several towns, and many rural homes served Rio Grande water under the jurisdiction of the 93rd District Court of Texas through its Special Water Master. This jurisdiction began in June 1956.

The total diversion in 1957 was 732,200 acre-feet, most of which was made by pumping from the river. About 95% of the water diverted from the Rio Grande was determined by this Commission through continuous records of discharge at open-channel rating stations and at deflection meter stations developed by this Commission. The records for the balance of the diversions were furnished by the Special Water Master. Drainage from this area does not return to the Rio Grande, but some of it is re-used in the area. More than one crop per year is often grown on parts of this land.

Average Flow in Second-Feet

Daily:	Max. @ 5,560	June 7, 1956	Min. 0	Sept. 25, 1949; Oct. 25, 1951
Monthly:	Max. 4,110	June 1955	Min. 25.2	June 1930
Yearly:	Max. 2,180	1955	Min. 653	1941

Mean Daily Discharge in Second-Feet 1957 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	403	260	58.0	104	3,810	2,970	646	1,890	1,860	1,300	1,020	206
2	509	214	41.0	41.0	3,080	1,530	959	1,560	2,080	1,280	664	527
3	347	420	7.0	28.0	2,080	2,750	889	1,260	1,950	1,280	794	703
4	63.0	660	58.0	142	1,100	3,440	558	1,120	1,640	850	1,530	657
5	190	767	56.0	398	300	2,720	892	1,810	1,420	734	1,640	484
6	203	423	32.0	286	288	1,670	1,080	1,810	1,160	862	1,760	484
7	122	499	75.0	266	331	1,260	1,270	1,460	764	1,710	1,630	402
8	139	525	43.0	472	255	1,570	1,930	1,210	719	1,820	1,430	365
9	444	295	28.0	559	33.0	1,560	1,960	1,160	1,210	1,710	1,080	826
10	375	309	66.0	338	20.0	2,040	2,070	853	1,200	1,520	932	1,050
11	427	526	143	284	10.0	1,490	1,820	839	1,220	1,570	1,280	1,000
12	169	565	84.0	274	38.0	1,430	1,990	1,840	992	1,280	1,740	840
13	133	683	371	149	273	1,650	2,090	1,530	736	1,140	1,980	625
14	288	586	367	68.0	551	1,640	1,610	1,180	497	1,900	1,100	456
15	459	258	205	75.0	802	1,420	2,070	1,230	728	1,960	872	701
16	552	321	152	66.0	996	1,670	1,970	1,130	1,680	1,960	141	1,510
17	735	616	209	285	749	2,720	2,000	806	1,670	2,140	118	1,510
18	797	859	138	363	421	2,890	1,620	798	1,610	2,140	249	1,420
19	494	564	84.0	189	823	2,160	1,160	1,660	1,750	1,210	339	1,320
20	294	425	104	100	2,120	2,080	933	1,670	1,550	1,140	445	1,290
21	371	138	91.0	58.0	2,350	1,690	893	1,840	1,110	1,930	474	1,250
22	274	105	104	49.0	2,390	717	1,760	1,650	1,030	1,690	915	1,090
23	334	164	88.0	150	2,950	363	1,990	1,610	1,750	1,310	584	1,300
24	209	73.0	18.0	414	3,260	447	2,080	1,260	1,930	1,260	406	992
25	163	118	67.0	359	3,180	678	1,560	1,000	1,750	1,190	405	936
26	196	181	43.0	141	3,520	577	1,260	1,500	1,060	774	281	1,690
27	180	134	59.0	99.0	3,900	527	942	1,460	588	807	187	1,760
28	340	47.0	64.0	404	3,910	395	1,020	1,690	280	1,550	84.0	1,310
29	536	74.0	2,420	4,670	254	2,050	1,880	245	1,460	118	1,160	1,160
30	718	88.0	3,860	4,930	221	2,110	1,940	965	1,240	184	1,860	1,670
31	422		69.0		4,060		1,990	1,790		1,220		
Sum	10,735.0		12,441.0		46,529		44,436		43,937		31,394	
	10,886.0		3,086.0		57,200.0		47,172		37,144		24,382.0	

Current Year 1957

Month	Average Rainfall		Extreme Second-Feet		Average Second-Feet	Total	Acre-Feet		
	Average Inches **	High Day	Low Day	Acre-Feet			Average	Maximum	Minimum
1922-1957	1957	Day	Day	Day	Day	Day	Day	Day	Day
Jan.	1.27	.16	18	797	4	63.0	351	21,600	57,411
Feb.	1.02	2.82	18	859	28	47.0	383	21,300	158,000
Mar.	1.13	2.62	13	371	3	7.0	99.5	6,120	66,575
Apr.	1.41	2.97	30	3,860	3	28.0	415	24,700	156,000
May	3.11	2.12	30	4,930	11	10.0	1,850	113,000	194,000
June	2.63	4.82	4	3,440	30	221	1,550	92,300	245,000
July	1.72	.08	30	2,110	4	558	1,520	93,600	74,858
Aug.	2.16	.54	30	1,940	18	798	1,430	88,100	161,000
Sept.	4.36	1.42	2	2,080	29	245	1,240	73,700	10,000
Oct.	2.28	.42	17	2,140	5	734	1,420	87,100	157,000
Nov.	1.25	3.20	13	1,980	28	84.0	813	48,400	62,766
Dec.	1.44	.91	30	1,860	1	206	1,010	62,300	131,000
Yearly	23.78	22.08		4,930		7.0	1,010	732,220	848,493
									1,581,400
									472,500

† And other days Ø Mean daily @ Period 1938-1957 ** Lower Rio Grande Valley area on United States side from Rio Grande City to the Gulf of Mexico.

DIVERSIONS FROM THE RIO GRANDE
ANZALDUAS CANAL NEAR REYNOSA, TAMAULIPAS

DESCRIPTION: Water-stage recorder and cable with stand-up cable car, located .5 mile below the canal intake. The zero of the gage is 86.32 feet above mean sea level, U.S.C. & G.S. datum. This canal diverts water from the Rio Grande at a point 12.7 river miles above the international bridge between Hidalgo, Texas and Reynosa, Tamaulipas, 1,076.6 river miles below the American Dam at El Paso, Texas, and 171.6 river miles upstream from the Gulf of Mexico.

RECORDS: Based on 180 meter measurements during the year, 172 by the Mexican and 8 by the United States Section of this Commission, and a continuous record of gage heights. Computations by shifting channel methods. Records available: 1952 through December 1957.

REMARKS: Diversions by this canal are for irrigation and domestic use in Mexico and for conveying water for storage in Culebrón, Villa Cárdenas, and Palito Blanco reservoirs, about 23 canal miles below this station. During 1957, 499,340 acres were irrigated with water delivered through this canal. Flow at this canal station is affected by backwater from the operation of canal gates 4.5 miles, 11.3 miles, and 22.5 miles below this station. During 1957, in order to facilitate construction of Anzalduas Dam, major portions of the Rio Grande flow were temporarily diverted into this canal and returned to the river through Poniente Drain (See page 45 in this water bulletin.)

EXTREME FLOWS FROM RECORDS: Momentary: Max. 10,950 second-feet on June 2, 1957, with a gage height of 16.01 feet. Zero flow occurs frequently.

Average Flow in Second-Feet

Daily:	Max. 9,350	May 29, 1957	Min. 0	Frequently
Monthly:	Max. 4,260	Feb. 1956	Min. 0	Several months
Yearly:	Max. 1,890	1957	Min. 150	1952

Mean Daily Discharge in Second-Feet 1957 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1,530	1,600	158	90.8	1,360	1,850	671	1,450	5,700	862	4,130	890
2	1,370	1,610	185	91.2	890	8,440	459	1,190	6,050	816	3,310	1,930
3	1,230	1,520	144	82.6	346	9,070	431	1,250	5,930	837	2,440	1,220
4	1,190	1,430	133	164	46.3	5,510	618	1,130	5,770	809	2,040	1,660
5	1,190	1,170	156	245	54.0	1,650	604	865	5,400	950	1,700	830
6	1,270	986	131	392	244	3,460	1,070	795	5,510	1,170	1,240	763
7	1,420	1,010	125	498	156	6,000	1,440	664	5,120	1,660	1,290	1,800
8	1,480	1,120	129	512	98.9	6,990	1,460	742	3,670	2,990	1,540	982
9	1,250	1,440	135	340	111	6,360	1,590	904	1,770	3,240	1,300	530
10	1,260	1,500	145	183	367	4,340	1,780	908	1,440	3,810	1,400	505
11	2,190	1,440	112	123	466	2,940	1,810	908	1,310	4,410	1,620	614
12	2,960	1,170	307	87.6	480	2,670	1,900	1,360	2,260	4,380	816	586
13	3,470	890	1,270	67.8	498	2,780	1,600	2,660	2,690	3,600	80.9	600
14	3,880	837	1,520	47.7	558	2,740	1,460	2,760	2,700	3,160	119	788
15	4,100	1,000	840	15.9	597	2,910	1,310	2,890	2,680	3,250	255	1,010
16	3,960	1,110	516	3.5	738	3,400	1,270	2,860	2,460	3,350	586	1,260
17	3,990	1,750	692	95.7	2,170	3,460	1,100	3,020	2,680	3,180	745	1,240
18	3,670	2,460	957	230	3,380	3,430	1,040	3,360	2,510	2,860	893	1,310
19	3,510	2,190	533	55.1	3,780	3,110	706	3,450	2,320	2,260	766	1,450
20	3,600	1,160	324	107	5,490	2,250	904	3,340	1,520	2,020	805	1,670
21	3,600	632	237	107	6,920	1,160	1,220	3,970	833	2,040	851	2,830
22	2,900	333	193	15.5	6,460	992	1,430	3,050	1,250	2,360	1,460	3,490
23	2,600	279	161	205	6,000	1,110	1,350	2,650	1,680	2,250	2,760	3,600
24	2,450	269	124	382	6,430	922	1,050	2,720	1,390	2,330	2,700	3,690
25	2,010	320	112	260	7,310	777	699	2,970	653	2,300	1,260	3,470
26	1,970	382	110	144	7,060	745	1,140	3,090	862	2,610	463	3,380
27	1,920	316	114	220	7,520	795	1,070	3,270	752	3,150	264	3,260
28	1,820	186	113	2,660	8,550	756	1,320	3,850	692	3,600	1,460	2,980
29	1,820	113	3,530	9,350	784	1,430	4,700	788	3,640	2,470	2,430	
30	1,550	97.8	2,340	6,390	770	1,460	5,700	738	3,810	1,430	2,550	
31	1,650	92.5		3,320	1,550	5,890	4,170		4,170		2,640	
Sum	30,110	9,979.3	13,295.4	97,140.2		78,366		81,874		55,958		
	72,810				36,942		79,128		42,193.9			

Current Year 1957

Month	Average Rainfall Inches **		Extreme Second-Feet		Average Second- Foot	Total Acre-Feet	Period 1952-1957				
			High	Low			Average	Maximum	Minimum		
	1952-1957	1957	Day	Day	Acre-Feet						
Jan.	.37	.23	15	4,100	4	1,140	2,350	144,400	82,735	147,500	0
Feb.	1.02	3.19	18	2,720	28	48.0	1,080	59,720	94,803	245,000	0
Mar.	.64	1.96	14	2,070	1	48.0	322	19,790	31,732	110,700	0
Apr.	1.92	3.04	29	4,170	†14	.4	443	26,370	50,518	129,200	0
May	1.24	2.01	28	9,960	† 7	40.3	3,130	192,700	102,210	259,300	379
June	2.30	3.27	2	10,950	30	717	3,070	182,800	115,127	208,400	0
July	1.28	.02	24	2,010	25	174	1,190	73,270	34,652	73,270	318
Aug.	1.80	.87	31	6,110	9	530	2,530	155,400	55,791	155,400	566
Sept.	3.00	1.09	2	6,180	21	77.7	2,640	157,000	78,796	157,000	106
Oct.	2.25	.39	31	4,770	4	625	2,640	162,400	52,170	162,400	0
Nov.	1.46	4.12	1	4,270	14	45.9	1,410	83,690	30,237	83,690	0
Dec.	.50	1.39	22	3,710	9	413	1,810	111,000	71,668	166,700	0
Yearly	17.78	21.58		10,950		.4	1,890	1,368,540	800,439	1,368,540	109,282

§ Mean daily ** Average of several stations. † And other days

MUNICIPAL WATER USES

In Acre-Feet

Tabulated below are yearly and monthly amounts of water pumped from the Rio Grande, or tributaries, into the municipal distribution systems of several cities along the border. The basic data are furnished by the municipalities. The Del Rio water came from San Felipe Springs. All other diversions are from the Rio Grande. Because of changing conditions, the period records are limited here to the past 10 years.

The population figures for Mexico are estimates furnished by the Mexican Section of the International Boundary and Water Commission. Population figures for United States cities are estimates made by the Chamber of Commerce in each city, except for Falcon Village, which was estimated by the International Boundary and Water Commission.

Records of Rio Grande water used by the city of Brownsville, as well as other municipalities in the Lower Rio Grande Valley on the United States side, are omitted because these amounts are included in the figures shown under "Diversions from the Rio Grande - United States Side Below Fort Ringgold, Rio Grande City, Texas" on page 60 herein. The municipal water supply of Reynosa, Tamaulipas, Mexico, is from the Rio Grande and Rhode Canal of the Marte R. Gómez Reservoir. Only the amounts diverted from the Rio Grande are shown below. The municipal water supply of Matamoros, Tamaulipas, Mexico, is from the Rio Grande and Soliseno Canal of Culebrón Reservoir. The Soliseno Canal water spills to the Rio Grande a short distance above the Matamoros water plant intake where it is diverted for municipal uses. The figures shown below do not include the water from Soliseno Canal.

In the United States

Month	EL PASO (Pop. 255,000)			DEL RIO (Pop. 24,000) Ø		
	1957	Period 1948-1957		1957	Period 1948-1957	
		Average	Maximum		Average	Maximum
Jan.	0	345.8	963.2	0	219.9	186.2
Feb.	0	356.7	843.0	0	233.8	204.7
Mar.	0	352.9	1,016.2	0	301.5	276.4
Apr.	0	481.4	1,016.5	0	253.4	289.3
May	0	551.4	1,103.7	0	253.9	323.8
June	218	785.4	1,277.0	57.0	385.9	396.3
July	533	827.4	1,187.0	4.4	668.0	455.3
Aug.	997	898.1	1,139.0	0	671.1	457.0
Sept.	410	760.4	1,158.0	0	428.0	340.9
Oct.	0	588.0	983.0	0	257.3	250.9
Nov.	0	339.5	842.7	0	193.7	207.7
Dec.	0	373.1	952.8	0	205.7	200.4
Yearly	2,158.0	6,660.1	11,384.6	1,058.4	4,072.2	3,588.9
						5,368.4
						2,577.7

Month	EAGLE PASS (Pop. 11,500)			LAREDO (Pop. 65,000)		
	1957	Period 1948-1957		1957	Period 1948-1957	
		Average	Maximum		Average	Maximum
Jan.	97.0	76.2	97.0	61.3	517.4	419.0
Feb.	88.8	73.2	90.8	52.1	506.3	412.4
Mar.	92.4	93.0	117.7	67.5	639.7	531.1
Apr.	95.9	95.6	117.8	64.5	630.9	571.8
May	108.4	105.9	148.4	70.2	725.6	627.5
June	118.4	122.9	173.4	86.8	818.1	670.0
July	217.4	143.0	217.4	103.7	1,098.1	770.6
Aug.	225.0	136.2	225.0	91.4	1,063.0	788.2
Sept.	142.1	109.6	146.3	74.9	790.7	602.8
Oct.	106.1	92.0	122.0	62.2	604.5	545.4
Nov.	83.9	76.9	97.4	63.1	446.3	449.4
Dec.	92.4	78.6	100.5	58.8	470.8	427.2
Yearly	1,467.8	1,203.1	1,467.8	899.0	8,311.4	6,815.4
						8,340.5
						5,620.6

Month	NEW ZAPATA (Pop. 2,200)			FALCON VILLAGE (Pop. 120)		
	1957	Period 1954-1957		1957	Period 1952-1957	
		Average	Maximum		Average	Maximum
Jan.	14.2	10.6	14.2	5.0	5.4	4.4
Feb.	13.5	11.0	13.5	7.6	4.3	4.2
Mar.	13.5	15.3	21.4	10.2	4.6	6.1
Apr.	11.4	15.7	24.7	10.5	5.7	5.6
May	19.7	19.2	27.2	11.4	6.6	5.9
June	19.5	18.6	21.1	13.5	6.2	6.9
July	33.0	23.7	33.0	14.7	11.7	8.7
Aug.	29.6	22.9	29.6	15.8	8.9	8.4
Sept.	23.0	15.5	23.0	8.9	7.7	5.7
Oct.	19.7	16.0	19.7	13.0	6.7	5.7
Nov.	26.1	15.7	26.1	9.4	3.4	3.8
Dec.	23.0	14.6	23.0	9.1	4.3	3.7
Yearly	246.2	198.8	246.2	140.4	75.5	69.1
						91.1
						51.9

Ø Includes Laughlin Air Force Base

MUNICIPAL WATER USES

In Acre-Feet

In the United States

Month	ROMA (Pop. 8,000) *			RIO GRANDE CITY (Pop. 5,500)				
	1957	Period 1948-1957			1957	Period 1948-1957		
		Average	Maximum	Minimum		Average	Maximum	Minimum
Jan.	20.1	12.9	20.1	5.9	48.7	40.9	54.2	25.7
Feb.	18.2	13.0	20.5	4.7	41.2	40.4	56.5	20.1
Mar.	20.5	16.1	23.5	7.2	44.1	45.6	63.3	25.9
Apr.	21.9	16.8	23.5	8.4	51.3	48.6	60.8	32.2
May	24.4	18.8	25.4	11.8	57.4	54.2	76.0	37.9
June	25.3	19.3	25.9	10.5	48.1	53.3	78.0	35.9
July	28.9	20.3	28.9	11.7	74.6	61.0	79.0	38.1
Aug.	28.3	20.0	28.3	12.3	75.1	60.6	75.1	38.5
Sept.	26.1	17.5	26.1	7.4	65.9	49.5	69.6	28.4
Oct.	24.6	16.6	24.6	9.1	58.1	47.5	62.1	30.3
Nov.	21.3	14.3	21.3	7.2	51.2	42.0	51.7	30.5
Dec.	22.2	14.4	22.2	7.8	45.4	43.3	67.9	33.3
Yearly	** 281.8	200.0	281.8	106.6	661.1	586.9	711.1	385.8

In Mexico

Month	NUEVO LAREDO (Pop. 78,000)			NUEVA CD. GUERRERO (Pop. 3,000)				
	1957	Period 1948-1957			1957	Period 1954-1957		
		Average	Maximum	Minimum		Average	Maximum	Minimum
Jan.	570.2	363.2	570.2	212.5	29.9	28.0	32.8	20.2
Feb.	564.9	348.0	564.9	179.8	27.4	24.8	28.9	18.4
Mar.	665.6	428.0	665.6	235.4	31.3	28.9	32.9	21.2
Apr.	663.2	450.6	663.2	244.7	30.7	29.9	33.4	22.3
May	694.0	490.6	694.0	302.0	33.4	32.4	35.3	26.8
June	735.3	510.5	735.3	282.5	33.3	32.0	33.9	28.1
July	612.7	514.6	749.6	283.4	37.5	34.7	37.5	31.1
Aug.	732.6	535.0	766.6	324.4	36.3	35.0	36.3	31.5
Sept.	544.9	470.2	697.8	263.6	33.6	31.5	33.6	28.7
Oct.	602.9	466.0	639.9	260.6	34.9	32.7	34.9	29.3
Nov.	544.2	414.4	611.9	232.0	31.5	31.8	34.5	28.8
Dec.	454.6	383.6	510.8	227.1	32.1	31.3	32.2	28.9
Yearly	7,385.1	5,374.7	7,385.1	3,101.6	391.9	373.0	399.3	315.3

Month	REYNOSA (Pop. 50,000)			MATAMOROS (Pop. 75,000)				
	1957	Period 1954-1957			1957	Period 1948-1957		
		Average	Maximum	Minimum		Average	Maximum	Minimum
Jan.	61.3	60.3	65.7	52.7	238.2	199.5	313.4	81.7
Feb.	63.2	62.4	68.1	54.3	329.2	189.0	329.2	75.9
Mar.	65.3	64.8	71.3	57.6	366.5	219.6	366.5	80.9
Apr.	65.7	65.5	73.0	58.4	361.1	215.5	361.1	82.9
May	67.0	68.0	76.2	61.6	320.1	214.9	325.3	90.0
June	67.3	68.3	76.2	61.6	420.2	220.2	420.2	90.9
July	68.7	68.8	76.2	61.6	458.1	230.1	458.1	91.9
Aug.	68.9	68.9	76.2	61.6	46.4	162.9	339.9	38.7
Sept.	64.9	65.7	74.6	58.4	287.7	206.4	315.2	100.8
Oct.	63.2	61.8	68.1	55.1	333.5	241.5	412.6	105.1
Nov.	60.8	60.5	67.3	54.3	344.4	225.5	367.8	86.0
Dec.	60.0	59.2	66.5	52.7	406.1	225.5	406.1	85.3
Yearly	776.3	774.2	859.4	689.9	3,911.5	2,550.6	3,911.5	1,120.1

* Estimated * Includes Los Saenz and Escobares, Texas and Cd. Miguel Alemán, Tamaulipas (5,000). ** Includes 123.0 acre-feet supplied to Cd. Miguel Alemán, Tamaulipas.

SUSPENDED SILT IN THE RIO GRANDE AND TRIBUTARIES

At each station, during each month of sampling, several water samples were taken by one of the following methods:

A. By lowering an open small-necked bottle in one or more verticals in the stream cross section, being careful to approach but not to strike bottom, thus securing an integrated sample at all depths. A monthly composite sample was later made by using, from each sample, a quantity proportional to the river flow volume represented by each sample. The gravimetric percentage of silt in this composite represented the silt in the monthly river flow.

B. By sampling at the stream surface with a separate bottle at each of three points, spaced 1/6, 1/2, and 5/6 of the stream width. A coefficient of 1.10 was applied to the average gravimetric percentage of silt in the three bottles and this product was applied to the volume of stream flow represented by that set of samples.

For ease of comparison, the assumption is made that one cubic foot of silt weighs 66.7 pounds, or one acre-foot of silt weighs 1,452 tons.

Month	1957			Period of Record		
	Tons		No. of Samples	Gravimetric Percentages		
	Water	Silt		Average	Maximum Sample	Minimum Sample

Rio Grande at El Paso, Texas

Period September 1947-1957

Jan.	298,000	24.0	24	.008038				.02	.27	1.4	0
Feb.	184,000	23.6	28	.01283				.02	.39	2.2	.01
Mar.	2,428,000	1,290	30	.05298				.89	12.7	33.7	.89
Apr.	9,270,000	4,880	30	.05265				3.4	17.0	45.2	3.4
May	736,000	222	31	.03017				.15	11.7	63.3	.08
June	19,774,000	15,500	30	.07827				10.7	29.4	152	3.7
July	50,245,000	100,000	31	.1995				68.9	43.5	124	1.1
Aug.	64,545,000	163,000	31	.2531				112	43.2	112	3.7
Sept.	37,644,000	64,300	30	.1708				44.3	22.4	92.3	1.7
Oct.	3,222,000	2,050	29	.06378				1.4	5.2	37.3	.01
Nov.	752,000	86.3	30	.01148				.06	.40	1.5	.01
Dec.	598,000	35.5	31	.005944				.02	.36	2.1	.01
Yearly	189,696,000	351,411.4	355	.1852				241.86	186.52	436.87	47.67

Samples and Analyses by U.S. Section, Method A

Rio Conchos near Ojinaga, Chihuahua

Period 1956

Jan.	21,975,000	0	13	0	0	0	0	0	0	0	0
Feb.	25,620,000	0	14	0	0	0	0	0	0	0	0
Mar.	17,301,000	0	19	0	0	0	0	0	0	0	0
Apr.	3,845,000	0	18	0	0	0	0	0	0	0	0
May	8,725,000	0	13	0	0	0	0	0	0	0	0
June	15,290,000	0	14	0	0	0	0	0	0	0	0
July	13,275,000	0	13	0	0	0	0	0	0	0	0
Aug.	32,959,000	243,000	14	.7362	2.1374	0	0	167			
Sept.	39,361,000	139,000	17	.3520	1.0993	0	0	95.7			
Oct.	27,604,000	31,900	14	.1154	1.4669	0	0	22.0			
Nov.	27,811,000	0	13	0	0	0	0	0			
Dec.	25,868,000	0	14	0	0	0	0	0			
Yearly	259,634,000	413,900	176	.1594	2.1374	0	0	284.7			

Samples and Analyses by Mexican Section, Method B

Rio Conchos near Ojinaga, Chihuahua

Period 1956-1957

Jan.	27,086,000	0	14	0	0	0	0	0	0	0	0
Feb.	28,736,000	6,550	14	.0228	.1576	0	4.5	2.3	4.5	0	0
Mar.	17,291,000	0	13	0	0	0	0	0	0	0	0
Apr.	9,573,000	0	14	0	0	0	0	0	0	0	0
May	36,942,000	211,000	15	.5718	2.0625	0	145	72.5	145	0	0
June	28,941,000	204,000	15	.7040	1.1023	0	140	70.0	140	0	0
July	18,220,000	136,000	17	.7467	2.4737	0	93.7	46.8	93.7	0	0
Aug.	60,100,000	398,000	23	.6629	1.4781	.0142	274	220	274	167	
Sept.	26,466,000	20,900	14	.0788	.3911	0	14.4	55.0	95.7	14.4	
Oct.	100,414,000	1,488,000	16	1.4817	2.7044	0	1,020	521	1,020	22.0	
Nov.	30,696,000	0	13	0	0	0	0	0	0	0	0
Dec.	28,466,000	0	12	0	0	0	0	0	0	0	0
Yearly	412,931,000	2,464,450	180	.5968	2.7044	0	1,691.6	987.6	1,691.6	284.7	

Samples and Analyses by Mexican Section, Method B

SUSPENDED SILT IN THE RIO GRANDE AND TRIBUTARIES

Month	1957						Period of Record		
	Tons		No. of Sam- ples	Gravimetric Percentages			Acre-Feet at 1,452 Tons Per Acre Foot		
	Water	Silt		Average	Maximum Sample	Minimum Sample	Average	Maximum	Minimum

Rio Grande at Lower Presidio Station

Period 1955-1957

Jan.	31,122,000	4,360	9	.01402			3.0	2.7	3.0	2.1
Feb.	36,254,000	12,300	8	.03386			8.5	3.9	8.5	1.4
Mar.	19,360,000	4,050	8	.02091			2.8	1.6	2.8	1.0
Apr.	11,007,000	139,000	9	1.2622			95.7	32.0	95.7	.13
May	43,244,000	234,000	8	.5417			161	53.9	161	.21
June	31,281,000	55,100	9	.1762			37.9	19.6	37.9	2.1
July	21,035,000	145,000	9	.6898			99.9	507	1,420	2.0
Aug.	69,001,000	483,000	11	.6999			333	587	1,360	66.8
Sept.	31,938,000	21,700	9	.06798			14.9	190	490	14.9
Oct.	109,189,000	622,000	9	.5697			428	266	428	28.3
Nov.	32,726,000	5,840	9	.01786			4.0	3.9	4.7	3.1
Dec.	30,122,000	3,390	8	.01125			2.3	2.1	2.6	1.4
Yearly	466,279,000	1,729,740	106	.3710			1,191.0	1,669.7	3,643.21	172.78

Samples and Analyses by U.S. Section, Method A

Rio Grande at Johnson Ranch, Texas

Period October 1951-1957

Jan.	30,566,000	4,400	5	.0144			3.0	1.5	3.0	.84
Feb.	46,716,000	367,000	5	.7850			253	43.0	253	.67
Mar.	19,460,000	13,300	4	.06827			9.2	2.6	9.2	.20
Apr.	4,782,000	64,300	5	1.3440			44.3	152	692	.07
May	76,129,000	292,000	4	.3834			201	144	304	0
June	32,733,000	258,000	7	.7891			178	515	1,570	31.6
July	19,136,000	415,000	7	2.1670			286	1,181	4,030	93.0
Aug.	62,416,000	594,000	9	.9513			409	1,106	3,840	2.8
Sept.	32,647,000	238,000	7	.7297			164	330	875	98.5
Oct.	106,814,000	1,266,000	8	1.1848			872	275	872	2.4
Nov.	32,394,000	5,730	5	.01770			3.9	2.6	5.4	.28
Dec.	31,213,000	3,810	7	.01220			2.6	8.6	48.3	.49
Yearly	495,006,000	3,521,540	73	.7114			2,426.0	3,761.3	6,970.30	803.27

Samples and Analyses by U.S. Section, Method A

Rio Grande at Langtry, Texas

Period April 1944-1957

Jan.	50,876,000	5,660	5	.01113			3.9	4.8	11.4	.94
Feb.	68,707,000	345,000	6	.5020			238	24.1	238	.31
Mar.	45,328,000	14,900	5	.03294			10.3	6.8	27.0	.29
Apr.	120,904,000	360,000	7	.2974			248	74.2	614	.14
May	260,740,000	480,000	7	.1840			331	242	873	.95
June	92,699,000	170,000	4	.1836			117	511	2,450	.91
July	47,296,000	71,300	4	.1507			49.1	1,362	5,780	4.6
Aug.	77,067,000	503,000	5	.6522			346	1,098	3,900	4.7
Sept.	66,753,000	338,000	6	.5058			233	1,182	3,280	1.0
Oct.	146,001,000	1,696,000	8	1.1618			1,170	749	3,260	5.1
Nov.	58,965,000	61,200	5	.1038			42.1	24.7	88.2	1.3
Dec.	54,550,000	6,870	5	.01259			4.7	7.8	46.8	.18
Yearly	1,089,886,000	4,051,930	67	.3718			2,793.1	5,286.4	9,171.72	645.10

Samples and Analyses by U.S. Section, Method A

Pecos River near Shumla, Texas

Period November 1954-1957

Jan.	12,077,000	391	5	.003240			.27	.36	.60	.20
Feb.	13,422,000	523	4	.003893			.36	.23	.36	.11
Mar.	13,713,000	550	5	.004009			.38	.35	.38	.30
Apr.	54,259,000	242,000	8	.4452			167	55.7	167	.06
May	235,530,000	591,000	8	.2509			407	136	407	.21
June	56,086,000	182	4	.0003243			.13	.54	.85	.13
July	22,924,000	112	5	.0004889			.08	7.5	22.2	.08
Aug.	17,708,000	624	4	.0035524			.43	8.2	23.8	.35
Sept.	21,795,000	570	4	.002614			.39	1.3	3.3	.14
Oct.	36,079,000	373	5	.001033			.26	16.5	48.4	.26
Nov.	29,297,000	1,260	4	.004302			.87	.50	.87	.03
Dec.	18,533,000	387	5	.002090			.27	.22	.27	.15
Yearly	531,423,000	837,972	61	.1577			577.44	227.40	577.44	52.24

Samples and Analyses by U.S. Section, Method A

SUSPENDED SILT IN THE RIO GRANDE AND TRIBUTARIES

Month	1957						Period of Record		
	Tons		No. of Samples	Gravimetric Percentages			Acre-Feet at 1,452 Tons Per Acre Foot		
	Water	Silt		Average	Maximum Sample	Minimum Sample		Average	Maximum

* Rio Grande near Del Rio, Texas

Period August 1955-1957

Jan.	89,874,000	13,300	13	.0148			9.2	4.9	9.2	.61
Feb.	106,021,000	258,000	11	.2433			178	89.2	178	.50
Mar.	95,710,000	50,300	14	.05251			34.6	17.7	34.6	.73
Apr.	304,814,000	888,000	13	.2914			612	306	612	.83
May	1,108,544,000	2,330,000	13	.2102			1,600	801	1,600	.26
June	338,227,000	1,140,000	10	.3383			785	417	785	48.9
July	137,776,000	77,000	14	.0559			53.0	30.8	53.0	8.7
Aug.	161,309,000	412,000	12	.2555			284	793	1,970	125
Sept.	151,713,000	224,000	11	.1474			154	912	2,360	154
Oct.	285,556,000	1,298,000	13	.4547			894	746	894	581
Nov.	155,649,000	148,000	12	.09488			102	41.5	102	10.7
Dec.	136,725,000	5,940	12	.004343			4.1	4.6	5.7	4.0
Yearly	3,071,918,000	6,844,540	148	.2228			4,709.9	4,163.7	4,709.9	1,008.37

Samples and Analyses by U.S. Section, Method A

Rio Grande at Laredo, Texas

Period 1953-1957

Jan.	83,164,000	6,920	21	.008325			4.8	7.3	12.9	4.5
Feb.	96,314,000	27,800	20	.02888			19.1	7.2	19.1	1.7
Mar.	94,015,000	37,800	18	.04016			26.0	11.6	26.8	.78
Apr.	630,606,000	2,795,000	19	.4433			1,920	458	1,920	.47
May	1,835,623,000	5,134,000	23	.2797			3,540	905	3,540	2.3
June	498,350,000	1,085,000	16	.2178			747	3,294	12,400	.62
July	95,883,000	7,290	11	.0076			5.0	1,249	3,440	5.0
Aug.	129,312,000	12,300	15	.00948			8.5	680	1,960	4.2
Sept.	229,915,000	277,000	15	.1204			191	605	1,940	41.3
Oct.	341,543,000	984,000	14	.2882			678	596	1,470	29.7
Nov.	185,328,000	122,000	8	.06583			84.0	24.7	84.0	6.1
Dec.	156,026,000	27,500	8	.01763			18.9	7.6	18.9	2.8
Yearly	4,376,079,000	10,516,610	188	.2403			7,242.3	7,845.4	19,257.72	734.10

Samples by Mexican Section and Analyses by U.S. Section, Method A

* Rio Grande at Falcón Dam-U.S. Tailrace

Period July 1955-1957

Jan.	220,965,000	6,100	10	.00276			4.2	3.6	4.2	2.9
Feb.	57,832,000	1,800	6	.00312			1.2	2.0	2.8	1.2
Mar.	3,242,000	236	2	.007282			.16	.58	1.0	.16
Apr.	26,514,000	912	7	.003439			.63	1.3	2.0	.63
May	295,240,000	7,530	10	.002552			5.2	4.4	5.2	3.7
June	222,953,000	6,640	8	.00298			4.6	11.6	18.7	4.6
July	151,079,000	782	14	.0005179			.54	.78	.91	.54
Aug.	279,380,000	1,240	12	.0004435			.85	1.2	2.6	.29
Sept.	204,621,000	2,450	10	.001197			1.7	1.3	1.7	.77
Oct.	268,851,000	1,170	12	.0004348			.81	1.1	2.2	.24
Nov.	105,140,000	3,490	6	.003318			2.4	1.9	2.4	.82
Dec.	176,537,000	2,100	10	.00119			1.4	2.4	3.8	1.4
Yearly	2,012,354,000	34,450	107	.001712			23.69	32.16	40.24	23.69

Samples and Analyses by U.S. Section, Method A

Río Alamo at Cd. Mier, Tamaulipas

Period 1934-1957

Jan.	0	0	0	0	0	0	0	2.0	21.8	0
Feb.	6,729,000	70,600	8	1.049	1,846	0	48.6	2.3	48.6	0
Mar.	8,623,000	69,200	11	.803	2,479	0	47.7	9.2	91.6	0
Apr.	49,213,000	332,000	4	.674	.930	0	229	37.9	229	0
May	39,487,000	408,000	13	1.034	1,483	0	281	52.1	281	0
June	11,516,000	95,200	15	.827	1,509	0	65.6	60.5	471	0
July	4,310	0	0	0	0	0	0	16.0	92.8	0
Aug.	1,000,000	0	3	0	0	0	0	173	1,610	0
Sept.	7,373,000	51,000	9	.692	1.067	0	35.1	233	2,920	" 0
Oct.	892,000	375	4	.042	.045	0	.26	73.7	558	0
Nov.	85,700	30.9	3	.036	.058	0	0	2.6	40.7	0
Dec.	387,000	0	4	0	0	0	0	.95	16.1	0
Yearly	125,310,010	1,026,405.9	74	.8191	2,479	0	707.26	663.25	3,156.57	97.18

Samples and Analyses by Mexican Section, Method B

⑧ Discharge based on records of flow at gaging stations "Below Diablo Dam Site" and "Arroyo las Vacas". # Some months missing. " Estimated Ø Discharges based on record of total releases from Falcón Reservoir.

SUSPENDED SILT IN THE RIO GRANDE AND TRIBUTARIES

Month	1957						Period of Record		
	Tons		No. of Sam- ples	Gravimetric Percentages			Acre-Feet at 1,452 Tons Per Acre Foot		
	Water	Silt		Average	Maximum Sample	Minimum Sample	Average	Maximum	Minimum

† Rio Grande near Los Ebanos, Texas

Period May 1956-1957

Jan.	217,757,000	15,800	8	.007269	.0119		10.9		
Feb.	73,943,000	20,400	9	.02753	.2856		14.0		
Mar.	23,671,000	28,200	7	.1191	.1618		19.4		
Apr.	105,982,000	922,000	11	.8701	1.1195		635		
May	346,575,000	419,000	14	.1209	.3586		289	254	
June	266,193,000	182,000	13	.06829	.3088		125	76.1	125
July	148,160,000	6,640	9	.004480	.0090		4.6	2.7	4.6
Aug.	268,786,000	57,900	9	.02153	.0269		39.9	21.0	39.9
Sept.	224,556,000	51,400	8	.02289	.1930		35.4	38.3	41.2
Oct.	262,020,000	23,300	9	.008876	.0192		16.0	17.7	19.4
Nov.	118,173,000	2,770	9	.002348	.0048		1.9	1.3	1.9
Dec.	181,931,000	10,100	9	.005537	.0038		7.0	9.8	12.5
Yearly	2,237,747,000	1,739,510	115	.07773	1.1195		1,198.1		

Samples and Analyses by U.S. Section, Method A

§ Rio Grande at Hidalgo, Texas

Period May 1956-1957

Jan.	32,844,000	2,120	3	.006450			1.5		
Feb.	27,301,000	3,670	6	.01345	.0208		2.5		
Mar.	7,145,000	369	7	.005160	.0124		.25		
Apr.	65,776,000	249,000	5	.3783	.6428		171		
May	149,756,000	116,000	8	.07778	.1915		79.9	71.6	79.9
June	101,979,000	21,400	4	.02103			14.7	18.6	22.5
July	97,516,000	9,750	4	.01000			6.7	3.8	6.7
Aug.	99,166,000	7,100	5	.007160	.0322		4.9	2.8	4.9
Sept.	74,913,000	9,440	4	.01260	.0191		6.5	13.8	21.1
Oct.	98,807,000	16,900	4	.01710	.0284		11.6	6.6	11.6
Nov.	48,751,000	9,770	4	.02005			6.7	3.9	6.7
Dec.	76,724,000	4,920	5	.006413	.0102		3.4	2.0	3.4
Yearly	880,678,000	450,439	59	.05115			309.65		

Samples and Analyses by U.S. Section, Method A

Rio Grande near San Benito, Texas

Period April 1955-1957

Jan.	7,426,000	482	4	.006484			.33	3.9	7.4	.33
Feb.	8,230,000	298	4	.003625			.21	1.6	2.9	.21
Mar.	3,486,000	153	4	.004378			.11	.49	.87	.11
Apr.	17,144,000	12,000	5	.07005			8.3	5.0	8.3	.11
May	77,661,000	385,000	5	.4962	4.3738		265	92.5	265	5.4
June	26,029,000	6,640	4	.02551			4.6	3.2	4.6	
July	6,380,000	157	5	.002459			.11	.59	1.1	
Aug.	13,256,000	1,260	4	.009472			.87	.71	1.2	.07
Sept.	10,481,000	2,790	5	.02664	.0768		1.9	9.5	24.4	1.9
Oct.	19,355,000	2,810	4	.01450			1.9	.88	1.9	.34
Nov.	9,324,000	781	3	.008381			.54	.42	.54	.35
Dec.	14,869,000	5,310	5	.03570			3.7	1.4	3.7	.06
Yearly	213,641,000	417,681	52	.1955			287.57	120.19	287.57	23.27

Samples and Analyses by U.S. Section, Method A

Rio Grande at Lower Brownsville, Texas

Period April 1955-1957

Jan.	384,000	24.5	4	.006372			.02	.16	.29	.02
Feb.	1,435,000	59.3	4	.004130			.04	.18	.33	.04
Mar.	2,910,000	121	4	.004155			.08	.13	.18	.08
Apr.	1,189,000	64.5	5	.005422			.04	.34	.80	.04
May	43,771,000	85,000	5	.1941	.3803		58.5	19.8	58.5	.38
June	30,116,000	7,800	4	.02591			5.4	2.0	5.4	.29
July	1,524,000	151	5	.009900	.0127		.10	.43	1.1	.08
Aug.	296,000	19.7	4	.006653			.01	1.0	2.9	.01
Sept.	1,786,000	142	5	.007968			.10	.80	2.3	0
Oct.	2,484,000	266	4	.01069			.18	.12	.18	.03
Nov.	4,619,000	488	3	.01057			.34	.20	.34	.12
Dec.	712,000	90.8	5	.01275	.0332		.06	.08	.15	.02
Yearly	91,226,000	94,226.8	52	.1033			64.87	25.24	64.87	1.97

Samples and Analyses by U.S. Section, Method A

† Discharge based on record of flow at Fort Ringgold plus estimated storm runoff. § Discharge based on record of flow at "Below Anzalduas Dam Site" plus return flow at "Poniente Drain".

**CHEMICAL ANALYSIS OF WATER SAMPLES FROM THE RIO GRANDE
AND TRIBUTARIES - 1957**

The following chemical analyses are from composites made up periodically by taking from each independent water sample an amount of water proportional to the volume of river flow represented by that sample. This compositing and the determination of the electrical conductivity of the individual water samples were done by the United States Section of the International Boundary and Water Commission. Chemical analyses were made by the U.S. Department of Agriculture, Agricultural Research Service, U.S. Salinity Laboratory, Riverside, California.

To convert milligram equivalents to parts per million by weight, multiply each ion by its appropriate conversion factor. These factors are: Ca, 20; Mg, 12.16; Na, 23; (CO₃ plus HCO₃), expressed as CO₃, 30.0; SO₄, 48; Cl, 35.5; NO₃, 62. To convert tons per acre-foot to parts per million, multiply tons per acre-foot by 735.5. Electrical conductivity, reported in the following tables as ECx10⁶ at 25°C, is a relative measure of the total salt concentration in the water samples.

Electrical conductivity and salt content for each sample collected at Rio Grande above Morillo Drain, Morillo Drain near Reynosa Vieja, Tamaulipas and Rio Grande at Anzalduas Dam Site are tabulated on page 77 in this bulletin.

Month	No. of Samples	Dissolved Solids		Mean ECx10 ⁶ @25°C	Boron p.p.m.	pH	% Na **	% Cl ***	Mean Milligram Equivalents per Liter						
		Tons Per Acre-Foot	Total Tons						Ca	Mg	Na	CO ₃ + HCO ₃	SO ₄	Cl	NO ₃

Sampling by U.S. Section

Rio Grande at El Paso, Texas

Jan.	24	4.13	907	4,420	.82	8.2	77	42	7.93	3.01	35.92	5.20	21.98	20.00	T
Feb.	28	4.69	638	4,970	1.02	8.0	76	43	9.53	2.97	40.60	4.15	26.21	22.95	T
Mar.	30	2.26	4,050	2,460	.33	7.9	64	41	6.69	2.36	16.13	3.31	11.80	10.55	.02
Apr.	30	1.56	10,600	1,740	.25	8.1	58	36	5.26	2.11	10.29	3.53	7.93	6.40	.01
May	31	2.86	1,540	3,150	.57	8.0	71	42	6.75	2.48	23.06	3.75	15.11	13.80	.01
June	30	1.03	15,000	1,160	.21	7.8	53	30	3.94	1.48	6.13	3.15	5.08	3.55	T
July	31	.61	22,600	733	.15	7.9	42	21	3.13	1.11	3.11	2.97	2.95	1.60	T
Aug.	31	.58	27,600	661	.12	8.2	39	18	3.18	.86	2.60	2.87	2.66	1.25	T
Sep.	30	.71	19,700	839	.11	8.0	43	22	3.68	1.20	3.62	2.65	3.92	1.85	.02
Oct.	29	2.12	5,020	2,420	.44	8.1	71	42	5.16	1.94	17.23	3.70	10.56	10.50	T
Nov.	30	5.21	2,880	5,690	.90	8.3	79	51	8.46	4.37	47.15	5.81	23.85	30.64	.01
Dec.	30	4.55	2,000	5,040	.81	8.2	78	49	7.61	3.96	40.64	5.62	21.01	25.84	T
Mean \bar{x}	9354	.81	912,535	927	.16	8.0	49	27	3.59	1.19	4.57	2.96	3.99	2.52	T
Period Avg.	1.10		516,000	1,220			53	30	4.35	1.60	6.62	3.51	5.43	3.76	
Tons of Constituents, 1957									13,700	2,750	20,000	16,800	36,400	17,000	
Average Tons, Period 1930-1957									55,500	12,400	96,900	67,100	166,000	84,900	

Sampling by U.S. Section

Rio Grande at Fort Quitman, Texas

Jan.	No Flow														
Feb.	No Flow														
Mar.	No Flow														
Apr.	No Flow														
May	2 .49		362	542	.13	8.0	38	12	2.95	.40	2.09	2.65	2.14	.65	.04
June	No Flow														
July	" .47		250	530			49	12	2.39	.41	2.68	2.99	1.79	.66	.04
Aug.	" .39		597	458			49	12	2.06	.35	2.31	2.59	1.55	.57	.04
Sept.	" .39		348	458			49	12	2.06	.35	2.31	2.59	1.55	.57	.04
Oct.	2 .35		402	425	.19	8.0	57	12	1.59	.33	2.56	2.67	1.23	.55	.04
Nov.	No Flow														
Dec.	No Flow														
Mean \bar{x}	.4	.405	1,959	471			49	12	2.12	.36	2.38	2.66	1.59	.59	.04
Period Avg.	2.37		414,000	2,680			61	55	7.59	3.10	16.72	3.60	8.71	15.17	
Tons of Constituents, 1957									280	288	360	526	503	138	
Average Tons, Period 1930-1957									36,200	8,970	91,500	25,700	99,600	128,000	

Sampling by U.S. Section

Rio Grande at Upper Presidio Station

Jan.	No Flow														
Feb.	No Flow														
Mar.	No Flow														
Apr.	" .34		63.2	377			28		# 2.71						.40
May	2 .34		381	377			28		# 2.71						.40
June	6 .74		1,170	751			26		# 5.76						.65
July	" .41		44.3	488			35		# 3.25						.60
Aug.	" .41		12.1	488			35		# 3.25						.60
Sept.	4 .41		284	488			35		# 3.25						.60
Oct.	5 .40		992	471			34		# 3.11						.50
Nov.	No Flow														
Dec.	No Flow														
Mean \bar{x}	.17	.476	2,946.6	525			31		# 3.72						.53
Period Avg.	1.91		312,000	2,170			59		# 8.91						11.09
Tons of Constituents, 1957															158
Average Tons, Period 1935-1957															87,200

^a Estimated ^b Trace ^c Total ^d Weighted mean ** Percent of total cations *** Percent of total anions # Sum of calcium and magnesium.

**CHEMICAL ANALYSIS OF WATER SAMPLES FROM THE RIO GRANDE
AND TRIBUTARIES - 1957**

Month	No. of Sam- ples	Dissolved Solids		Mean ECx10 ⁶ @25°C	Boron p.p.m.	pH	% Na **	% Cl ***	Mean Milligram Equivalents per Liter					
		Tons Per Acre- Foot	Total Tons						Ca	Mg	Na	CO ₃ + HCO ₃	SO ₄	Cl

Río Conchos near Ojinaga, Chihuahua

Sampling by Mexican Section	Jan.	10	1.36	27,100	1,390	.32	8.1	50	17	5.80	1.64	7.38	3.35	8.99	2.55	.05
	Feb.	13	1.26	26,600	1,320			49	#	6.99		6.76	3.18		2.35	
	Mar.	10	1.33	16,900	1,380			48	#	7.46		6.97	3.23		2.80	
	Apr.	10	1.03	7,250	1,050			34	#	7.18		3.78	2.60		1.70	
	May	15	1.00	27,180	1,060			49	#	5.44		5.26	3.07		1.85	
	June	15	1.21	25,800	1,200			33	#	8.43		4.15	2.87		1.75	
	July	16	1.21	16,200	1,250	.27	7.9	33	14	7.88	1.09	4.46	2.75	8.94	1.95	.02
	Aug.	22	1.02	45,100	1,050			42	#	6.34		4.56	2.80		1.55	
	Sept.	14	1.24	24,100	1,340			51	#	6.65		7.02	2.82		2.60	
	Oct.	14	.94	69,500	962			34	#	6.67		3.38	2.52		1.25	
	Nov.	13	1.53	34,600	1,580			53	#	7.55		8.60	2.75		3.40	
	Dec.	12	1.51	31,600	1,540			53	#	7.33		8.18	2.61		3.12	
Mean @	Ø164		1.16	Ø 351,930	1,200			44	#	6.96		5.43	2.82		2.03	
Period Avg.		.65	492,000	689				39	#	4.34		2.74	2.61		1.00	
Tons of Constituents, 1957												51,600	35,000		29,700	
Average Tons, Period												65,100	81,000		36,800	

Rio Grande at Johnson Ranch, Texas

Sampling by U.S. Section	Jan.	5	1.40	31,500	1,440	.43	7.9	50	18	5.90	1.64	7.54	3.15	9.39	2.70	.04
	Feb.	7	1.09	37,500	1,150			51	#	5.81		6.03	2.95		2.15	
	Mar.	4	1.23	17,600	1,280			49	#	6.75		6.42	2.87		2.50	
	Apr.	6	.85	3,000	922			49	#	4.76		4.64	3.47		1.55	
	May	5	.99	55,400	1,040			53	#	4.95		5.52	3.00		1.70	
	June	7	1.12	27,000	1,120			34	#	7.74		3.99	2.65		1.65	
	July	7	.85	12,000	908	.17	8.0	32	7	5.80	.81	3.10	3.45	5.77	.65	.02
	Aug.	9	1.04	47,700	1,050			37	#	6.91		4.10	2.85		1.30	
	Sept.	7	.96	23,000	1,060			52	#	5.11		5.56	2.80		1.90	
	Oct.	10	.92	72,300	945			33	#	6.57		3.18	2.29		1.10	
	Nov.	5	1.62	38,600	1,660			50	#	8.46		8.62	3.17		3.60	
	Dec.	7	1.55	35,600	1,580			50	#	8.03		8.02	3.07		3.20	
Mean @	Ø79		1.10	Ø 401,200	1,140			44	#	6.54		5.20	2.83		1.84	
Period Avg.		.94	465,200	994				44	#	5.66		4.43	2.72		1.93	
Tons of Constituents, 1957												59,200	42,000		32,300	
Average Tons, Period												68,800	54,900		46,100	

Rio Grande at Langtry, Texas

Sampling by U.S. Section	Jan.	5	1.04	38,900	1,100	.06	8.0	44	18	4.52	2.01	5.05	3.15	6.30	2.10	.04	
	Feb.	8	.92	46,600	975	.17	8.0	44	16	4.33	1.28	4.37	2.93	5.56	1.65	.04	
	Mar.	5	.90	30,000	954	.22	8.0	42	18	4.13	1.57	4.18	3.03	5.11	1.75	.04	
	Apr.	8	.36	32,000	420	.06	8.2	24	12	2.63	.72	1.06	2.50	1.25	.50	.04	
	May	8	.45	86,400	506	.10	7.9	26	11	3.21	.51	1.32	2.76	1.82	.55	.03	
	June	4	.70	47,700	759	.08	8.0	33	14	4.12	1.09	2.60	2.87	3.95	1.15	.02	
	July	4	.62	21,600	733	.11	8.0	33	15	3.70	.39	2.50	3.13	3.46	1.15	.02	
	Aug.	5	1.09	61,800	1,100	.18	8.2	30	11	6.86	1.36	3.53	3.15	7.72	1.35	.03	
	Sept.	6	.69	33,900	788	.14	8.0	36	14	4.12	1.16	2.92	2.90	4.14	1.20	.04	
	Oct.	8	.75	80,200	790	.10	8.0	31	10	4.76	.89	2.53	2.85	4.67	.80	.03	
	Nov.	5	1.06	46,000	1,120	.18	8.2	41	17	5.36	1.44	4.72	2.95	6.63	2.02	.04	
	Dec.	5	1.12	44,900	1,170	.26	7.9	46	19	4.71	1.81	5.46	2.90	6.96	2.28	.04	
Mean @	Ø71		.71	Ø 570,000	767	.12	8.0	35	14	4.12	1.05	2.74	2.86	4.05	1.11	.03	
Period Avg.		.77	692,000	793				42	21	3.8	1.13	3.50	2.70	3.89	1.72		
Tons of Constituents, 1957												90,000	13,900	68,700	93,500	21,200	42,800
Average Tons, Period												93,700	16,700	98,900	98,900	229,000	75,100

* Total @ Weighted mean ** Percent of total cations *** Percent of total anions * Sum of calcium and magnesium.

**CHEMICAL ANALYSIS OF WATER SAMPLES FROM THE RIO GRANDE
AND TRIBUTARIES - 1957**

Month	No. of Sam- ples	Dissolved Solids		Mean ECx10 ⁶ @25°C	Boron p.p.m.	pH	% Na **	% Cl ***	Mean Milligram Equivalents per Liter					
		Tons Per Acre- Foot	Total Tons						Ca	Mg	Na	CO ₃ + HCO ₃	SO ₄	Cl

Sampling by U.S. Section

Pecos River near Shumla, Texas															
Jan.	5	2.77	24,600	3,180	.19	7.8	57	63	7.79	5.80	18.15	2.70	9.17	20.20	.04
Feb.	5	3.24	32,000	3,710	.25	7.8	60	64	8.17	6.59	22.40	2.56	10.79	24.20	.03
Mar.	5	4.36	44,000	4,890	.32	7.9	61	66	10.71	8.79	30.68	2.45	14.93	33.25	.02
Apr.	10	1.37	54,700	1,630	.11	8.1	53	55	4.99	2.55	8.38	2.53	4.70	8.70	.03
May	12	1.00	173,000	1,160	.08	8.0	48	50	4.18	1.65	5.29	2.30	3.33	5.60	.01
June	4	1.68	69,400	2,000	.23	7.9	55	58	5.21	3.43	10.69	2.45	5.83	11.30	.03
July	5	1.81	30,600	2,160	.16	8.0	56	59	5.37	4.00	11.99	2.55	6.27	12.65	.04
Aug.	4	1.88	24,400	2,240	.18	8.0	56	60	5.53	4.06	12.19	2.55	6.29	13.30	.03
Sept.	4	1.65	26,400	2,040	.25	8.0	55	59	5.28	3.66	10.74	2.60	5.54	11.78	.03
Oct.	5	1.72	45,600	2,040	.18	8.0	55	59	5.30	3.52	10.91	2.60	5.51	11.85	.05
Nov.	4	2.42	52,300	2,810	.22	8.2	58	62	7.10	4.82	16.27	2.77	7.98	17.50	.05
Dec.	5	2.97	40,400	3,380	.20	7.9	57	62	8.35	6.12	19.26	3.00	9.79	21.20	.04
Mean \bar{x}	Ø 68	1.58	Ø 617,400	1,850	.14	8.0	54	57	5.23	3.06	9.78	2.46	5.30	10.48	.02
Period Avg.		1.82	432,000	2,138			55	59	5.80	3.73	11.54	2.47	6.13	12.63	
Tons of Constituents,									55,900	19,800	119,000	39,200	135,000	197,000	
Average Tons, Period									37,600	14,800	85,900	24,100	95,300	145,000	

Sampling by Mexican Section

Río San Diego at Jiménez, Coahuila

Río San Diego at Jiménez, Coahuila															
Jan.	5	.47	874	543	.07	7.9	14	13	4.18	.72	.78	3.75	1.11	.75	.02
Feb.	4	.44	466	511			15	#	4.45		.78	3.50	.70		
Mar.	4	.43	576	489			16	#	4.35		.80	3.20	.75		
Apr.	5	.23	9,260	276			7	#	2.64		.21	2.37	.25		
May	6	.27	17,700	306			6	#	2.93		.19	2.65	.25		
June	4	.36	6,390	424			9	#	4.04		.40	3.15	.40		
July	4	.38	961	467	.02	8.0	14	13	3.43		.85	.69	3.10	1.18	.65
Aug.	5	.43	533	514			15	#	4.61		.80	3.31	.70		.04
Sept.	4	.37	1,300	444			13	#	4.02		.59	3.17	.50		
Oct.	5	.36	1,640	413			13	#	3.79		.55	3.00	.55		
Nov.	4	.41	959	486			13	#	4.51		.69	3.52	.58		
Dec.	"	.41	964	486			13	#	4.51		.69	3.52	.58		
Mean \bar{x}	Ø 50	.288	Ø 41,623	336			8	#	3.18		.29	2.72		.32	
Period Avg.		.349	20,600	393			14	#	3.50		.56	2.70		.50	
Tons of Constituents,											1,310	16,000		2,230	
Average Tons, Period											1,040	6,500		1,430	

Sampling by Mexican Section

Río San Rodrigo near El Moral, Coahuila

Río San Rodrigo near El Moral, Coahuila															
Jan.	No Flow		146	385			11	#	3.62		.45	2.90		.35	
Feb.	No Flow						6	#	2.52		.17	2.20	.15		
Mar.	.32		3,810	260			7	#	3.76		.29	3.12	.25		
Apr.	3	.23	9,440	386			7	#	3.62		.28	3.00	.30		
May	3	.34	1,000	374			7	#	2.73	.75	.48	2.55	.96	.40	.01
June	4	.33	75.3	374	.06	8.0	12								
July	4	.30													
Aug.	No Flow														
Sept.	No Flow						17	#	4.30		.90	3.15	.70		
Oct.	1	.45	55.4	500			11	#	3.62		.45	2.90	.35		
Nov.	4	.32	136	385			11	#	3.62		.45	2.90	.35		
Dec.	.32		116	385											
Mean \bar{x}	Ø 19	.302	Ø 14,778.7	343			7	#	3.33		.26	2.79		.22	
Period Avg.		.330	9,300	364			12	#	3.32		.45	2.64		.39	
Tons of Constituents,											398	5,570		520	
Average Tons, Period											393	3,040		529	

^a Estimated Ø Total Ø Weighted mean ** Percent of total cations *** Percent of total anions # Sum of calcium and magnesium

**CHEMICAL ANALYSIS OF WATER SAMPLES FROM THE RIO GRANDE
AND TRIBUTARIES – 1957**

Month	No. of Sam- ples	Dissolved Solids		Mean ECx10 ⁶ @25°C	Boron p.p.m.	pH	% Na **	% Cl ***	Mean Milligram Equivalents per Liter				
		Tons Per Acre- Foot	Total Tons						Ca	Mg	Na	CO ₃ + HCO ₃	SO ₄

Sampling by Mexican Section

Rio Grande at Laredo, Texas

Jan.	20	1.04	63,600	1,180	.21	8.1	46	33	4.28	2.09	5.44	3.00	4.99	3.90	.05
Feb.	20	1.04	73,700	1,190			47		# 6.40		5.61	2.90		3.65	
Mar.	18	1.14	78,900	1,300			50		# 6.42		6.32	2.77		5.10	
Apr.	25	.40	186,000	476			32		# 3.19		1.50	2.21		1.25	
May	30	.38	513,000	450			27		# 3.25		1.22	2.30		1.05	
June	16	.62	227,000	718			40		# 4.24		2.86	2.47		2.25	
July	10	.82	57,800	977	.10	7.9	43	35	3.76	1.74	4.14	2.51	3.79	3.45	.04
Aug.	15	.79	75,200	899			47		# 5.23		4.57	2.50		2.80	
Sept.	15	.50	84,600	621			37		# 3.88		2.27	2.31		1.72	
Oct.	14	.65	163,000	740			38		# 4.54		2.80	2.55		1.95	
Nov.	8	.88	120,000	1,000			41		# 5.91		4.08	2.85		3.32	
Dec.	8	1.00	114,000	1,130			47		# 5.93		5.24	2.69		4.10	
Mean \oplus	.0199	.55	Ø 1,756,800	637			37		# 4.00		2.34	2.41		1.83	
Period Avg.	.60	1,190,000	694				39		# 4.25		2.67	2.44		2.12	
Tons of Constituents,											236,000	316,000		284,000	
Average Tons, Period	1956-1957										167,000	199,000		204,000	

Sampling by Mexican Section

Río Salado at Las Tortillas, Tamaulipas

Jan.	No	Flow													
Feb.	1	.40	600	436			30		# 3.05		1.32	1.78		.72	
Mar.	1	.32	349	372			28		# 2.76		1.08	1.70		.90	
Apr.	2	.49	1,460	551			37		# 3.38		2.02	1.71		1.45	
May	4	.51	7,560	553			28		# 4.02		1.56	2.57		1.15	
June	10	.39	7,370	461			24		# 3.56		1.14	2.57		.75	
July	No	Flow													
Aug.	No	Flow													
Sept.	7	.39	6,170	477			31		# 3.27		1.50	2.30		.95	
Oct.	2	.40	560	473			34		# 3.11		1.60	2.31		.85	
Nov.	"	.40	14.3	473			34		# 3.11		1.60	2.31		.85	
Dec.	No	Flow													
Mean \oplus	.027	.426	Ø 24,083.3	492			28		# 3.55		1.41	2.40		.95	
Period Avg.	.500	51,500	595				27		# 4.24		1.56	2.52		1.26	
Tons of Constituents,											2,490	5,530		2,590	
Average Tons, Period	1955-1957										5,020	10,600		6,240	

Sampling by U.S. Section

Rio Grande at Falcón Dam-U.S. Tailrace

Jan.	10	.82	134,000	936	.14	8.0	44	32	3.71	1.51	4.10	2.60	3.77	3.00	.03
Feb.	6	.96	40,900	1,100	.21	8.0	45	33	4.23	1.77	5.00	2.87	4.52	3.70	.02
Mar.	1	1.05	2,510	1,180	.26	8.2	47	35	4.23	1.95	5.54	2.71	4.94	4.20	.01
Apr.	6	1.07	20,900	1,220	.22	49	37	37	4.26	2.06	6.00	2.61	5.13	4.60	T
May	10	.50	108,000	595	.13	7.9	39	31	2.71	.88	2.26	2.10	1.92	1.85	.01
June	.8	.42	68,900	506	.05	7.9	34	30	2.53	.77	1.70	2.00	1.44	1.50	.02
July	14	.42	46,600	521	.07	7.8	34	28	2.65	.77	1.74	2.25	1.51	1.45	.01
Aug.	12	.47	96,800	551	.10	8.0	34	29	2.72	.78	1.84	2.33	1.49	1.55	T
Sept.	10	.46	69,500	567	.11	8.1	36	30	2.77	.78	1.99	2.35	1.58	1.65	.01
Oct.	12	.50	99,000	602	.13	8.0	39	30	2.74	.84	2.28	2.30	1.81	1.80	T
Nov.	6	.52	40,300	630	.14	8.0	38	30	2.85	.95	2.36	2.47	1.95	1.92	.01
Dec.	10	.56	72,800	648	.11	7.8	37	30	2.95	1.07	2.34	2.40	2.06	1.92	T
Mean \oplus	.0105	.54	Ø 800,210	639	.11		39	31	2.90	.96	2.42	2.31	2.07	1.94	
Period Avg.	.65	1,099,700	761				40	31	3.32	1.22	3.06	2.39	2.88	2.35	
Tons of Constituents,									117,000	23,500	112,000	134,000	200,000	139,000	
Average Tons, Period	1956-1957								153,000	34,000	162,000	165,000	318,000	192,000	

[“] Estimated T Trace Ø Total [⊕] Weighted mean ** Percent of total cations *** Percent of total anions # Sum of calcium and magnesium. [†] Tonnage figures based on total releases from Falcón Reservoir.

ELECTRICAL CONDUCTIVITY OF WATER SAMPLES

1957

| Date ECx10 ⁶
@25°C |
----------------------------------	----------------------------------	----------------------------------	----------------------------------	----------------------------------	----------------------------------	----------------------------------	----------------------------------	----------------------------------	----------------------------------	----------------------------------

Rio Grande at El Paso, Texas

January	February	March	April	June	July	August	September	October	November
1 4,550	13 5,640	22 5,650	27 4,570	1 4,840	7 825	12 637	17 823	24 2,320	30 5,330
6 4,350	14 6,210	23 5,570	28 3,860	2 4,880	8 802	13 590	18 835	26 4,550	December
8 4,370	15 6,030	24 5,660	29 3,890	3 4,840	9 785	14 601	19 860	27 5,090	1 5,140
11 4,140	16 6,370	25 5,690	30 1,920	4 5,130	10 795	15 632	20 850	28 5,270	2 3,930
12 4,290	17 6,330	26 1,970	May	5 4,700	11 766	16 649	21 862	29 5,420	3 6,000
13 4,370	18 5,870	27 1,870	1 1,340	6 4,840	12 765	17 612	22 925	30 5,450	4 5,970
14 4,460	19 4,580	28 1,860	2 1,690	7 5,080	13 737	18 634	23 999	31 5,730	5 5,650
15 4,350	20 4,350	29 1,770	3 1,560	8 5,350	14 713	19 651	24 913	November	6 5,620
16 4,550	21 4,700	30 1,790	4 2,600	9 5,680	15 693	20 687	25 1,070	1 5,440	7 5,560
17 4,550	22 5,170	31 1,950	5 3,880	10 1,670	16 688	21 676	26 1,320	2 5,620	8 5,420
18 4,650	23 5,770	April	6 4,790	11 1,300	17 733	22 654	27 1,680	3 5,560	9 5,420
19 4,380	24 4,190	1 1,710	7 4,140	12 1,270	18 732	23 633	28 2,000	4 5,810	10 5,160
20 4,530	25 4,160	2 1,680	8 3,940	13 1,270	19 729	24 645	29 2,160	5 5,770	11 3,830
21 4,530	26 4,700	3 1,670	9 3,810	14 1,170	20 675	25 617	30 2,520	6 5,560	12 3,750
22 4,590	27 4,330	4 1,690	10 4,570	15 1,200	21 648	26 659	October	7 5,070	13 3,810
23 4,310	28 4,380	5 1,690	11 5,080	16 1,110	22 681	27 629	1 3,200	8 4,650	14 4,270
24 4,240	March	6 1,710	12 5,490	17 1,100	23 708	28 714	2 3,520	9 5,230	15 4,020
25 4,350	1 4,450	7 1,680	13 5,550	18 1,050	24 690	29 727	3 3,930	10 5,170	16 3,680
26 4,310	2 4,630	8 1,680	14 5,550	19 1,020	25 686	30 697	4 3,640	11 5,300	17 4,540
27 4,370	3 4,920	9 1,890	15 5,650	20 1,011	26 591	31 625	5 4,310	12 5,390	18 5,110
28 4,370	4 5,920	10 1,780	16 5,950	21 973	27 701	September	6 3,640	13 5,770	19 5,420
29 4,480	5 6,480	11 2,020	17 6,020	22 940	28 714	1 514	7 3,500	14 5,590	20 5,420
30 4,570	6 6,400	12 1,920	18 6,130	23 933	29 680	2 604	8 4,070	15 6,450	21 5,420
31 4,570	7 6,830	13 1,900	19 6,130	24 967	30 813	3 662	9 4,680	16 5,680	22 5,620
February	8 6,210	14 1,590	20 6,170	25 964	31 792	4 782	10 5,390	17 5,970	23 5,590
1 5,390	9 6,400	15 1,620	21 5,980	26 1,000	August	5 744	11 5,010	18 5,650	24 5,440
2 4,470	10 6,170	16 1,630	22 5,980	27 1,050	1 757	6 732	12 4,580	19 5,870	25 4,810
3 3,990	11 5,750	17 1,590	23 5,550	28 1,200	2 693	7 781	13 1,960	20 5,870	26 4,830
4 4,620	12 6,100	18 1,650	24 4,350	29 1,150	3 627	8 749	14 869	21 5,870	27 4,850
5 4,430	13 5,920	19 1,870	25 4,490	30 1,220	4 639	9 784	15 1,190	22 5,740	28 4,920
6 4,540	14 5,720	20 1,670	26 4,450	July	5 645	10 797	16 1,760	23 5,740	29 4,720
7 4,720	16 7,470	21 1,560	27 4,860	1 926	6 637	11 819	17 2,320	24 5,740	30 4,720
8 5,410	17 8,130	22 1,740	28 5,230	2 884	7 671	12 904	18 2,900	25 5,830	
9 6,400	18 8,610	23 2,230	29 4,760	3 924	8 617	13 845	19 3,910	26 5,970	
10 5,970	19 7,260	24 2,480	30 4,930	4 889	9 594	14 804	20 4,040	27 6,010	
11 5,380	20 5,790	25 3,720	31 4,830	5 909	10 766	15 807	21 1,960	28 6,010	
12 6,210	21 5,310	26 4,130		6 990	11 734	16 866	22 1,760	29 5,650	

Rio Grande at Fort Quitman, Texas

May	May	October	October						
8 534	8 530	23 433	23 402						

Rio Grande at Upper Presidio Station

May	June	June	September	September	October	October	October	
9 357	4 479	18 769	19 745	3 554	4 444	22 703	24 443	
9 323	18 801	19 730	21 702	3 560	6 627	24 449	25 383	October 486

Río Conchos near Ojinaga, Chihuahua

January	February	April	May	June	July	August	September	October	November
1 1,430	18 1,310	1 1,680	17 1,100	18 1,110	25 855	16 857	13 1,280	21 857	29 1,460
2 1,360	19 1,230	12 1,830	20 989	21 844	26 1,630	17 856	15 1,480	22 801	December
4 1,420	20 1,150	15 1,880	22 1,240	24 1,310	27 1,120	19 920	18 1,480	25 1,210	2 1,410
7 1,410	22 1,200	17 1,850	24 1,200	25 1,470	29 1,300	20 1,020	20 1,480	28 1,370	4 1,380
15 1,420	25 1,310	19 1,820	27 1,170	26 1,040	31 1,380	21 872	23 1,450	30 1,570	9 1,510
21 1,350	27 1,070	22 1,800	29 1,220	28 1,020	August	22 752	25 1,390	November	11 1,540
23 1,330	March	24 1,780	30 1,170	July	1 1,660	23 995	27 1,370	1 1,640	13 1,440
25 1,370	1 1,180	26 1,720	31 1,120	1 1,600	2 1,430	24 1,210	30 1,490	4 1,560	16 1,570
28 1,380	4 1,220	29 762	June	5 1,680	5 1,450	26 1,250	October	6 1,580	18 1,540
30 1,490	6 1,330	30 864	3 1,040	8 1,760	6 1,000	28 1,300	2 1,560	8 1,570	20 1,550
February	8 1,360	May	4 1,210	10 1,770	7 1,470	30 1,380	4 1,660	11 1,640	23 1,620
1 1,430	11 1,390	1 1,030	5 1,430	12 1,390	8 966	September	7 1,670	13 1,670	25 1,600
4 1,490	13 1,380	3 2,380	7 1,460	15 1,710	9 1,100	2 1,220	9 757	15 1,610	27 1,620
6 1,520	18 1,330	6 1,110	10 1,530	17 1,710	10 1,180	4 1,530	11 837	18 1,590	30 1,630
8 1,520	25 1,530	8 763	12 1,560	19 1,780	12 1,010	5 1,320	12 879	20 1,540	
11 1,430	27 1,660	10 1,030	14 1,540	22 1,610	13 927	6 1,130	14 1,240	22 1,570	
13 1,310	29 1,660	13 1,140	17 1,620	23 978	14 617	9 1,250	16 1,240	25 1,590	
15 1,420		15 1,050	18 1,210	24 771	15 951	11 1,200	18 1,340	27 1,510	

ELECTRICAL CONDUCTIVITY OF WATER SAMPLES
1957

Date	ECx10 ⁶ @25°C												
------	-----------------------------	------	-----------------------------	------	-----------------------------	------	-----------------------------	------	-----------------------------	------	-----------------------------	------	-----------------------------

Rio Grande at Lower Presidio Station

January	February	March	May	June	July	August	September	October	December
3 1,340	14 1,360	28 1,700	6 1,200	18 1,470	19 2,280	22 807	27 1,490	30 1,640	6 1,450
7 1,400	18 1,230	April	9 773	18 1,460	23 897	23 857	October	November	10 1,490
10 1,390	21 1,200	1 1,860	13 1,340	19 961	26 1,250	27 1,290	1 1,580	1 1,610	13 1,560
14 1,410	25 1,160	4 1,980	17 1,100	19 1,010	30 1,180	30 1,340	4 1,700	6 1,560	17 1,610
17 1,460	28 1,130	8 2,330	20 995	21 864	August	September	8 1,740	8 1,590	20 1,700
21 1,360	March	11 2,010	24 1,360	25 518	1 1,430	3 1,200	11 1,260	13 1,600	27 1,660
25 1,400	4 1,200	15 2,250	28 1,150	28 1,240	6 983	6 1,280	11 1,410	15 1,610	30 1,630
26 1,370	7 1,290	18 2,270	June	July	9 963	10 1,350	15 1,200	19 1,590	
31 1,540	11 1,340	22 2,010	4 1,110	1 785	13 1,030	12 1,140	18 1,420	22 1,650	
February	14 1,350	25 1,950	7 1,490	3 1,340	16 1,060	17 1,430	22 890	26 1,510	
4 1,470	18 1,380	29 1,200	11 1,590	9 1,840	20 946	20 1,580	22 936	29 1,510	
7 1,610	21 1,410	May	14 1,730	12 2,100	21 860	23 1,500	24 1,150	December	
11 1,480	25 1,610	2 1,030	18 1,170	16 2,100	21 870	25 1,540	24 1,190	3 1,470	

Rio Grande at Johnson Ranch, Texas

January	February	April	May	June	July	August	September	October	November
2 1,480	19 1,160	1 1,560	14 961	21 1,130	25 545	22 1,180	24 448	23 790	25 1,640
8 1,440	20 861	9 1,620	20 1,060	24 1,050	29 1,380	26 882	30 1,460	23 793	December
15 1,440	20 859	16 1,630	20 1,040	27 1,220	August	29 1,200	October	28 1,030	2 1,520
22 1,470	26 1,230	23 1,620	June	July	1 1,300	September	3 1,470	31 1,300	4 1,540
29 1,390	March	30 643	3 860	1 817	5 1,300	3 1,260	7 1,550	November	9 1,520
February	5 1,190	30 659	10 1,350	8 1,440	9 927	5 1,460	14 856	4 1,680	12 1,550
5 1,540	12 1,250	May	17 1,270	11 1,470	12 1,110	9 1,280	17 1,364	12 1,650	16 1,630
12 1,570	19 1,460	1 1,130	20 1,160	15 1,510	15 799	13 1,250	21 941	14 1,650	27 1,590
19 618	26 1,480	7 1,380	20 1,160	22 562	19 915	16 1,290	21 1,090	18 1,660	30 1,620

Rio Grande at Langtry, Texas

January	February	March	April	May	July	August	October	November	December
3 1,080	18 997	21 914	28 323	28 490	5 837	30 1,310	4 596	1 975	20 1,120
7 1,100	21 626	25 1,020	29 267	31 422	12 712	September	7 913	8 1,060	23 1,130
14 1,100	21 784	April	May	June	19 672	6 614	11 415	15 1,190	
21 1,090	22 1,080	1 961	6 526	7 730	31 746	13 488	14 1,090	18 1,170	
28 1,140	25 845	8 859	11 485	14 739	August	20 982	18 907	29 1,190	
February	March	13 784	12 902	21 739	2 746	23 1,050	21 762	December	
4 1,060	4 908	15 502	22 657	28 936	9 1,140	27 991	25 699	2 1,170	
11 1,180	11 1,010	22 679	27 288	16 1,050	30 1,000	20 767	28 872	6 1,220	
18 1,010	18 946	28 320	27 285	23 1,000				13 1,190	

Pecos River near Shumla, Texas

January	February	March	April	May	July	August	October	November	December
2 3,130	19 3,470	26 4,880	29 1,050	13 536	28 1,650	9 2,160	27 2,180	8 2,100	November
8 3,210	19 3,470	April	29 1,040	13 535	June	16 2,160	September	15 941	December
15 3,270	26 4,540	2 4,490	29 1,050	13 388	4 1,700	23 2,100	3 2,100	22 1,980	3 3,310
21 3,150	March	9 4,280	30 782	14 582	11 2,120	30 2,130	10 2,490	29 3,870	10 3,330
29 3,170	5 4,590	12 683	May	14 497	18 2,100	August	17 2,040	November	16 3,360
February	12 5,050	13 3,180	7 3,040	16 1,270	25 2,100	6 2,200	24 1,740	5 1,910	24 3,410
5 3,290	19 5,150	16 2,390	11 1,070	21 1,380	July	13 2,220	October	12 3,610	31 3,480
12 3,350	21 4,900	23 3,250	11 1,060	22 1,610	2 2,120	20 2,180	1 2,220	19 3,310	

Upper Devils River

February	April	June	July	August	September	October	November	December
5 401	5 373	5 336	3 358	1 366	15 369	5 335	1 391	3 311
14 346		17 317	18 350	8 360	28 376	18 394	17 231	5 345
		24 322					20 367	17 407

Devils River near Mouth

January	February	March	April	May	July	September	October	November	December
3 378	8 367	21 338	9 354	10 365	1 334	4 339	4 354	14 356	4 328
18 369	March	April	16 366	24 365	15 348	16 365	23 220	17 356	17 377
25 377	4 372	2 338		June	August	27 336			

ELECTRICAL CONDUCTIVITY OF WATER SAMPLES

1957

Rio Grande near Del Rio, Texas

January	February	March	April	May	July	August	September	October	November
2 1,110	6 1,060	15 1,470	18 761	27 540	3 873	8 759	16 674	23 773	29 1,110
4 1,030	8 1,070	18 1,450	22 551	29 491	5 880	12 862	20 881	25 1,140	December
7 1,050	11 1,210	20 1,430	24 670	31 699	7 827	14 892	23 1,010	28 834	2 1,060
9 1,050	13 1,050	22 1,260	26 374	June		8 799	16 882	25 812	30 992
11 1,020	15 1,180	25 919	29 762	3 570	10 816	19 882	27 430	November	4 929
14 1,100	18 1,070	27 1,380	May		5 748	12 815	21 827	30 884	1 1,000
16 1,040	20 910	29 1,300	1 540	7 727	17 804	23 913	October	4 1,360	8 1,090
18 1,130	25 2,120	April	3 717	10 837	19 744	26 853	2 796	6 660	11 1,080
21 1,090	27 1,160	1 1,130	6 785	12 892	22 799	28 728	4 863	8 757	17 1,050
23 1,020	March		3 1,360	9 850	14 884	24 826	30 713	7 708	12 1,200
25 1,140	1 1,180	5 1,090	13 323	18 948	26 740	September	9 675	15 1,210	19 1,110
28 1,050	4 1,150	8 1,090	15 446	20 752	29 678	4 732	11 875	18 1,120	23 1,100
30 1,090	6 1,120	10 1,290	17 554	24 921	31 631	6 778	14 858	20 1,140	27 1,030
February	8 1,280	12 1,190	20 626	28 865	August	9 585	16 436	22 1,090	30 1,040
1 1,010	11 1,260	15 933	22 558	July		2 838	11 757	18 407	25 1,130
4 1,030	13 1,330	17 792	23 789	1 942	5 732	13 839	21 789	27 1,120	

Rio Grande at Maverick Canal Headgate

January	February	March	April	May	July	August	September	October	November
1 1,100	7 1,100	16 1,530	22 300	29 502	4 893	10 844	16 735	23 724	29 1,100
2 1,110	8 1,130	17 1,630	23 551	30 794	5 818	11 701	17 683	24 798	30 1,080
3 1,090	9 1,110	18 1,470	24 447	31 687	6 818	12 754	18 691	25 1,130	December
4 1,110	10 1,120	19 1,470	25 650	June					1 1,110
5 1,080	11 1,190	20 1,420	26 311	1 721	8 793	14 914	20 820	27 722	2 1,110
6 1,090	12 647	21 1,240	27 421	2 698	9 804	15 842	21 805	28 772	3 1,100
7 1,110	13 1,100	22 1,350	28 489	3 599	10 854	16 836	22 517	29 858	4 1,090
8 1,120	14 1,110	23 1,240	29 399	4 629	11 790	17 845	23 657	30 965	5 1,110
9 1,110	15 1,160	24 1,300	30 404	5 729	12 813	18 900	24 1,180	31 1,020	6 1,140
10 1,130	16 1,250	25 937	May					November	
11 1,140	17 1,250	26 1,080	1 616	7 769	14 826	20 803	26 685	1 1,010	8 1,170
12 1,070	18 1,200	27 1,410	2 617	8 707	15 771	21 968	27 623	2 1,050	9 1,140
13 1,150	19 1,030	28 1,340	3 642	9 782	16 752	22 954	28 586	3 1,110	10 1,130
14 1,150	20 934	29 1,380	4 703	10 808	17 792	23 940	29 947	4 1,100	11 1,120
15 1,150	21 999	30 1,380	5 836	11 861	18 741	24 861	30 744	5 1,310	12 1,110
16 1,120	22 1,490	31 1,290	6 806	12 928	19 803	25 724	October		
17 1,170	23 1,240	April					6 787	7 750	14 1,170
18 1,150	24 1,220	1 1,090	8 875	14 838	21 808	27 875	2 842	8 785	15 1,110
19 1,140	25 1,280	2 1,270	9 841	15 971	22 809	28 773	3 727	9 857	16 1,110
20 1,150	26 1,190	3 1,140	10 1,060	16 1,350	23 763	29 782	4 758	10 1,110	17 1,080
21 1,150	27 1,120	4 1,410	11 367	17 1,670	24 812	30 756	5 826	11 1,140	18 1,050
22 1,140	28 1,300	5 1,300	12 407	18 956	25 844	31 797	6 807	12 1,150	19 1,100
23 1,150	March					September			
24 1,160	6 1,300	7 1,270	14 430	20 831	27 545	1 761	8 711	14 1,280	21 1,060
25 1,150	2 1,270	8 1,250	15 413	21 808	28 628	2 816	9 590	15 1,280	22 1,090
26 1,150	3 1,060	9 1,220	16 540	22 839	29 692	3 919	10 761	16 1,240	23 1,060
27 1,160	4 1,170	10 1,210	17 431	23 785	30 621	4 779	11 820	17 1,260	24 1,080
28 1,150	5 1,200	11 1,250	18 490	24 903	31 796	5 728	12 833	18 1,200	25 1,060
29 1,150	6 1,240	12 1,190	19 410	25 992	August				
30 1,150	7 1,250	13 783	20 406	26 903	1 700	7 791	14 1,060	20 1,200	27 1,050
31 1,150	8 1,330	14 923	21 724	27 887	2 733	8 660	15 956	21 1,160	28 1,060
February	9 1,370	15 570	22 505	28 911	3 895	9 576	16 479	22 1,130	29 1,090
1 1,130	10 1,380	16 1,410	23 646	29 866	4 883	10 616	17 676	23 1,110	30 1,100
2 1,130	11 1,350	17 932	24 748	30 926	5 764	11 642	18 427	24 1,110	31 1,090
3 1,170	12 1,420	18 898	25 814	July					25 1,080
4 1,160	13 1,470	19 385	26 887	1 872	7 901	13 732	20 760	26 1,100	
5 1,110	14 1,640	20 847	27 709	2 902	8 703	14 862	21 799	27 1,120	
6 1,130	15 1,510	21 719	28 366	3 842	9 798	15 782	22 624	28 1,130	

Río San Diego at Jiménez, Coahuila

January	February	March	April	May	June	July	August	September	October
1 494	2 484	6 438	16 499	13 286	11 417	17 466	23 521	23 395	28 496
8 555	8 561	15 490	26 235	18 252	18 408	26 477	30 485	October	November
15 552	14 520	21 536	26 255	27 296	25 435	August	September	468	3 447
22 545	21 515	April	May	27 283	July	1 481	2 503	9 325	9 459
29 553	March	2 504	7 401	June	3 453	9 504	11 495	14 382	14 509
	1 489	9 508	7 442	2 419	11 460	16 526	17 485	21 498	21 511

Río San Rodrigo near El Moral, Coahuila

ELECTRICAL CONDUCTIVITY OF WATER SAMPLES

1957

| Date ECx10 ⁶
@25°C |
----------------------------------	----------------------------------	----------------------------------	----------------------------------	----------------------------------	----------------------------------	----------------------------------	----------------------------------	----------------------------------	----------------------------------	----------------------------------	----------------------------------

Rio Grande at San Antonio Crossing near Villa Guerrero, Coahuila

January	February	March	April	May	June	August	September	October	December
3 1,170	7 1,210	17 1,540	22 836	20 435	27 1,030	5 769	11 810	24 823	4 1,090
17 1,210	14 1,190	21 1,470	30 608	23 644	July	12 872	18 919	November	11 1,200
22 1,210	21 1,280	28 1,470	May	30 517	8 941	19 888	27 804	4 1,030	18 1,170
24 1,220	28 1,250	April	2 787	June	12 943	26 807	October	13 1,040	
February	March	4 863	8 846	6 678	15 933	31 881	2 846	20 588	20 1,240
1 1,170	7 1,230	11 1,330	14 471	13 805	22 893	September	10		
5 1,190	14 1,400	18 833	15 470	20 1,280	29 886	4 832	17 520		

Rio Grande at Laredo, Texas

January	February	March	April	April	May	June	August	September	October
1 1,090	1 1,200	1 1,310	8 1,440	30 297	20 297	10 872	1 869	13 855	24 567
2 1,100	2 1,200	4 1,190	10 410	30 290	21 383	11 1,130	5 726	17 710	26 674
3 1,100	4 1,190	5 1,320	11 1,500	May	24 687	13 1,130	7 734	19 709	28 965
4 1,100	6 1,180	6 1,250	12 1,150	1 447	27 569	17 938	9 815	21 784	31 1,010
5 1,130	7 1,180	7 1,280	15 1,380	1 556	28 319	19 912	12 891	23 354	November
6 1,140	8 1,180	8 1,230	16 842	1 540	28 344	24 1,010	14 946	24 483	4 921
7 1,150	11 1,180	11 1,030	17 740	2 462	29 407	26 1,030	16 878	26 689	6 1,000
8 1,150	12 1,190	12 1,210	20 538	4 930	29 442	28 1,050	19 852	27 543	8 829
9 1,190	13 1,190	14 1,250	20 490	6 782	30 348	July	21 838	28 590	14 757
13 1,150	14 1,200	15 1,250	21 339	8 786	30 339	1 958	22 919	30 974	16 955
17 1,230	15 1,200	16 1,300	21 369	9 821	30 336	3 989	23 924	October	18 1,160
20 1,210	16 1,190	18 1,370	23 608	10 845	31 453	5 995	26 1,020	2 788	25 1,190
23 1,220	18 1,190	22 1,100	24 303	13 515	June	10 997	27 939	4 730	27 1,180
24 1,210	20 1,160	25 1,530	24 303	14 341	1 524	12 1,000	28 1,010	8 891	December
25 1,210	21 1,210	26 1,560	24 323	15 314	2 480	15 974	30 958	10 781	2 1,140
26 1,200	23 1,180	27 1,540	25 344	16 400	3 495	18 984	September	11 762	5 1,090
28 1,230	25 1,280	29 1,520	26 387	17 398	4 482	22 960	2 889	14 521	13 1,150
29 1,210	26 1,090	30 1,490	27 487	17 405	5 621	25 956	5 890	16 780	16 1,170
30 1,210	27 1,140	April	28 316	18 340	6 650	29 908	6 854	17 827	20 1,140
31 1,210	28 1,340	4 1,340	29 307	19 272	7 663	31 891	9 813	19 483	24 1,080
		5 1,220	30 273	19 358	8 703	11 889	22 754	27 1,090	
								30 1,120	

Río Salado at Las Tortillas, Tamaulipas

February	April	May	May	June	June	June	September	September	September
February 20 437	April 28 299	May 14 2,780	May 29 501	June 3 591	June 7 342	June 20 503	September 5 807	September 23 501	September 26 385
March 17 340	April 29 632	May 27 405	May 28 304	June 4 556	June 5 331	June 19 344	September 6 744	September 24 513	September 25 387
							22 414	25 19	19 490
							22 414	25 19	19 448

Rio Grande at Falcón Dam-U.S. Tailrace

January	February	April	May	July	July	August	September	October	December
2 877	4 1,060	21 1,220	27 489	1 493	29 528	26 549	27 579	24 602	2 625
10 895	6 1,120	23 1,230	31 537	3 490	31 531	28 552	30 580	29 602	5 622
11 901	11 1,130	26 1,230	June	5 499	August	30 553	October	31 607	10 625
14 931	13 1,150	May	5 568	8 506	5 530	September	2 579	November	11 626
16 920	15 1,150	8 980	10 483	10 505	7 535	5 561	4 585	4 638	16 629
18 949	March	13 580	12 465	12 513	9 534	6 559	6 614	9 631	18 640
21 955	11 1,170	14 639	14 472	15 512	12 535	9 561	8 608	18 624	20 637
25 980	31 1,200	17 602	17 473	18 511	14 538	11 561	10 597	22 633	23 652
28 992	April	18 614	21 491	19 518	16 540	13 564	12 595	25 625	25 652
30 996	3 1,200	20 658	24 498	22 523	19 544	16 564	14 605	29 631	27 664
February 1 999	1 1,190	22 620	26 498	24 517	21 545	17 573	16 601		
	23 563		26 523	23 548	20 569	20 605			

Rio Grande near Los Ebanos, Texas

January	February	April	May	June	July	August	September	November	December
1 960	17 1,240	2 3,980	2 669	1 743	2 730	13 565	24 682	1 622	13 913
4 1,020	18 876	5 1,470	3 936	2 610	5 734	15 572	27 772	5 686	17 702
8 942	19 739	9 2,500	8 1,780	3 539	10 570	20 580	October	8 721	20 677
15 956	22 1,620	12 2,590	10 1,950	4 553	12 585	23 580	1 742	12 975	24 685
18 949	March	16 3,380	15 838	6 624	16 621	27 565	4 760	8 663	19 915
23 999	2 2,980	20 2,560	16 728	7 624	19 690	30 561	8 663	19 915	31 779
25 1,040	5 3,120	23 3,240	17 730	11 598	23 628	September	11 637	22 807	
29 1,030	8 3,530	26 1,850	19 691	14 514	26 624	3 602	15 649	26 1,000	
February 12 3,700	12 1,060	21 661	18 498	30 615	6 579	18 645	29 630	6 763	
1 1,070	15 934	29 411	24 671	19 488	August	10 626	22 641	3 803	
5 1,170	17 799	30 525	28 527	21 790	2 619	13 602	25 644	6 763	
8 1,210	19 1,030	May	29 544	25 790	6 584	17 596	29 630	10 1,040	
13 1,280	1	584	31 703	28 821	9 569	20 571			

ELECTRICAL CONDUCTIVITY OF WATER SAMPLES

1957

Date	ECx10 ⁶ @25°C												
------	-----------------------------	------	-----------------------------	------	-----------------------------	------	-----------------------------	------	-----------------------------	------	-----------------------------	------	-----------------------------

Rio Grande at Hidalgo, Texas

January	February	March	April	May	June	July	September	October	December
8 1,150	18 1,430	15 1,130	26 3,700	10 1,740	17 754	26 1,030	6 685	21 926	2 1,060
18 1,060	21 1,360	18 1,480	29 639	17 1,240	21 1,120	August	13 827	27 753	10 1,070
25 1,120	22 1,240	22 2,340	30 581	27 586	28 1,940	2 920	23 1,040	November	17 1,200
February	March	29 4,140	May	28 645	July	12 1,120	30 1,350	4 928	24 792
1 1,210	1 2,350	April	1 575	31 680	8 1,120	16 732	October	12 1,050	31 918
8 1,480	8 3,320	5 6,340	2 651	June	12 1,000	26 711	5 890	18 2,230	
15 1,710	13 6,090	12 2,980	3 625	11 827	23 964	30 665	11 866	26 1,760	

Rio Grande at Mercedes, Texas, Pumps

January	February	March	April	May	July	August	September	October	November
1 1,020	7 1,290	16 1,070	22 3,230	29 746	4 1,890	10 1,150	15 782	22 924	28 1,440
2 1,060	8 1,350	17 1,070	23 3,290	30 556	5 1,990	11 1,150	16 773	23 913	29 1,370
3 1,190	9 1,400	18 1,070	24 3,510	31 432	6 2,150	12 1,220	17 801	24 913	30 1,260
4 1,190	10 1,470	19 1,300	25 3,600	June	7 2,140	13 1,100	18 775	25 883	December
5 1,190	11 1,490	20 1,260	26 5,020	1 485	8 2,100	14 1,230	19 794	26 889	1 1,560
6 1,210	12 1,430	21 1,440	27 6,620	2 887	9 1,300	15 1,120	20 760	27 902	2 1,790
7 1,200	13 1,430	22 1,980	28 6,700	3 911	10 1,130	16 735	21 914	28 886	3 960
8 1,260	14 1,450	23 1,660	29 4,320	4 705	11 1,110	17 730	22 1,370	29 858	4 974
9 1,310	15 1,490	24 1,660	30 610	5 622	12 956	18 754	23 895	30 807	5 1,060
10 1,280	16 1,510	25 1,680	May	6 643	13 1,040	19 712	24 1,050	31 793	6 1,090
11 1,250	17 2,030	26 1,790	1 474	7 757	14 956	20 713	25 998	November	7 1,070
12 1,110	18 1,610	27 1,810	2 475	8 930	15 1,030	21 673	26 891	1 750	8 1,110
13 1,100	19 1,520	28 1,840	3 461	9 734	16 1,060	22 683	27 885	2 757	9 1,180
14 1,110	20 2,200	29 1,620	4 523	10 689	17 1,040	23 678	28 943	3 733	10 1,120
15 1,120	21 1,410	30 2,190	5 667	11 715	18 1,060	24 678	29 1,200	4 762	11 1,130
16 1,050	22 1,410	31 2,190	6 671	12 660	19 1,060	25 735	30 1,210	5 815	12 1,070
17 1,050	23 1,280	April	7 757	13 813	20 1,020	26 635	October	6 918	13 1,110
18 1,040	24 1,280	1 2,170	8 802	14 918	21 1,110	27 715	1 1,350	7 910	14 1,070
19 1,040	25 1,380	2 3,070	9 814	15 839	22 1,250	28 720	2 1,290	8 933	15 1,470
20 1,060	26 1,510	3 3,080	10 846	16 825	23 1,370	29 671	3 1,360	10 1,090	17 1,480
21 1,070	27 1,620	4 3,440	11 874	17 833	24 1,170	30 747	4 1,360	11 1,030	18 1,320
22 1,080	28 1,700	5 4,190	12 954	18 780	25 981	31 698	5 1,270	6 1,150	12 1,080
23 1,100	March	6 4,850	13 1,690	19 763	26 969	September	6 1,692	7 1,120	13 2,120
24 1,130	1 7,170	7 5,250	14 2,410	20 742	27 936	1 692	7 1,120	13 2,120	20 974
25 1,130	2 8,520	15 1,720	21 935	28 1,060	2 653	8 1,210	14 1,110	21 979	
26 1,140	3 8,880	9 1,600	16 2,810	22 958	9 1,110	3 674	9 1,100	15 1,440	22 1,010
27 1,140	4 1,850	10 2,530	17 2,670	23 960	30 1,120	4 656	10 884	16 1,200	23 882
28 1,140	5 1,890	11 2,310	18 2,100	24 960	31 1,040	5 679	11 799	17 1,180	24 780
29 1,180	6 1,900	12 2,470	19 1,290	25 1,250	August	6 657	12 784	18 1,190	25 777
30 1,190	7 1,880	13 2,390	20 846	26 1,590	1 898	16 654	13 808	19 1,160	26 775
31 1,190	8 1,960	14 2,560	21 777	27 1,580	2 869	8 703	14 786	20 1,320	27 812
February	9 2,070	15 2,640	22 735	28 1,640	3 869	9 685	15 754	21 1,490	28 828
1 1,210	10 2,020	16 2,780	23 772	29 1,990	4 903	10 697	16 812	22 1,490	29 810
2 1,220	11 1,990	17 2,880	24 799	30 1,890	5 965	11 816	17 808	23 1,400	30 837
3 1,270	12 2,000	18 2,920	25 753	July	6 1,010	12 790	18 805	24 1,330	31 1,410
4 1,270	13 2,040	19 2,950	26 722	1 1,880	7 1,000	13 894	19 816	25 1,440	
5 1,240	14 1,860	20 3,230	27 785	2 1,700	8 1,120	14 860	20 832	26 1,460	
6 1,270	15 4,450	21 3,230	28 606	3 1,030	9 1,120	15 929	21 842	27 1,410	

Rio Grande near San Benito, Texas

January	February	March	April	May	July	August	September	October	November	December
7 1,220	11 1,410	18 3,780	22 2,130	20 909	2 1,790	12 1,150	23 1,130	4 802	3 1,330	
14 1,230	18 1,560	25 1,730	29 4,610	27 750	8 1,770	19 1,040	30 997	19 1,380	9 1,120	
21 1,070	25 1,300	April	May	June	15 1,010	26 760	October	25 1,570	16 1,370	
28 1,150	March	1 1,600	1 559	3 539	22 1,300	September	7 1,160	23 1,270	23 1,020	
February	4 1,660	8 2,920	2 731	10 961	29 1,020	3 690	14 814	30 850	30 850	
4 1,210	11 1,820	15 2,240	13 993	17 889	August	10 720	21 913			

Rio Grande at Lower Brownsville, Texas

January	February	April	May	June	July	September	October	November	December
7 2,620	18 986	1 1,650	2 619	17 870	29 1,750	3 788	7 1,570	4 996	3 3,560
14 2,380	27 1,560	8 2,480	4 648	24 890	August	10 768	14 1,290	19 1,550	9 2,490
21 2,270	March	15 2,550	20 2,290	July	6 1,620	16 933	21 915	25 1,270	16 2,420
28 2,530	4 1,460	22 2,470	27 869	1 1,100	12 1,160	23 1,110	28 633	23 1,310	30 1,190
February	11 1,660	29 3,270	June	8 1,620	19 1,490	30 1,260			
4 2,050	18 1,860	May	3 720	15 2,150	26 1,790				
11 1,540	25 1,870	1 2,290	10 739	22 2,040					

ELECTRICAL CONDUCTIVITY OF WATER SAMPLES
1957

ELECTRICAL CONDUCTIVITY AND SALT CONTENT

DATE OF SAMPLE	* RIO GRANDE ABOVE MORILLO DRAIN		Ø MORILLO DRAIN NEAR REYNOSA VIEJA, TAMPS.		# RIO GRANDE AT ANZALDUAS DAM SITE	
	ECx10 ⁶ @25°C	Dissolved Solids Tons Per Acre-Foot	ECx10 ⁶ @25°C	Dissolved Solids Tons Per Acre-Foot	ECx10 ⁶ @25°C	Dissolved Solids Tons Per Acre-Foot
Jan. 19	953	.813	20,920	18.2	1,020	.923
Feb. 8	1,210	1.14	18,080	17.8	1,470	1.31
Mar. 2	2,160	1.92	19,120	19.9	3,660	3.31
Mar. 7	3,040	2.84	19,820	21.8	4,580	4.12
Apr. 16	3,460	3.13	20,620	22.3	4,540	4.05
May 8	1,260	1.08	18,100	18.9	2,140	1.84
July 9	601	.525	19,020	23.0	1,130	1.06
Aug. 21	587	.440	21,200	24.0	709	.552
Sept. 10	648	.571	17,240	18.9	956	.859
Oct. 15	647	.536	17,080	18.9		
Nov. 5	699	.579	20,100	19.8	947	.772
Dec. 3	780	.826	20,000	20.3	1,080	.873

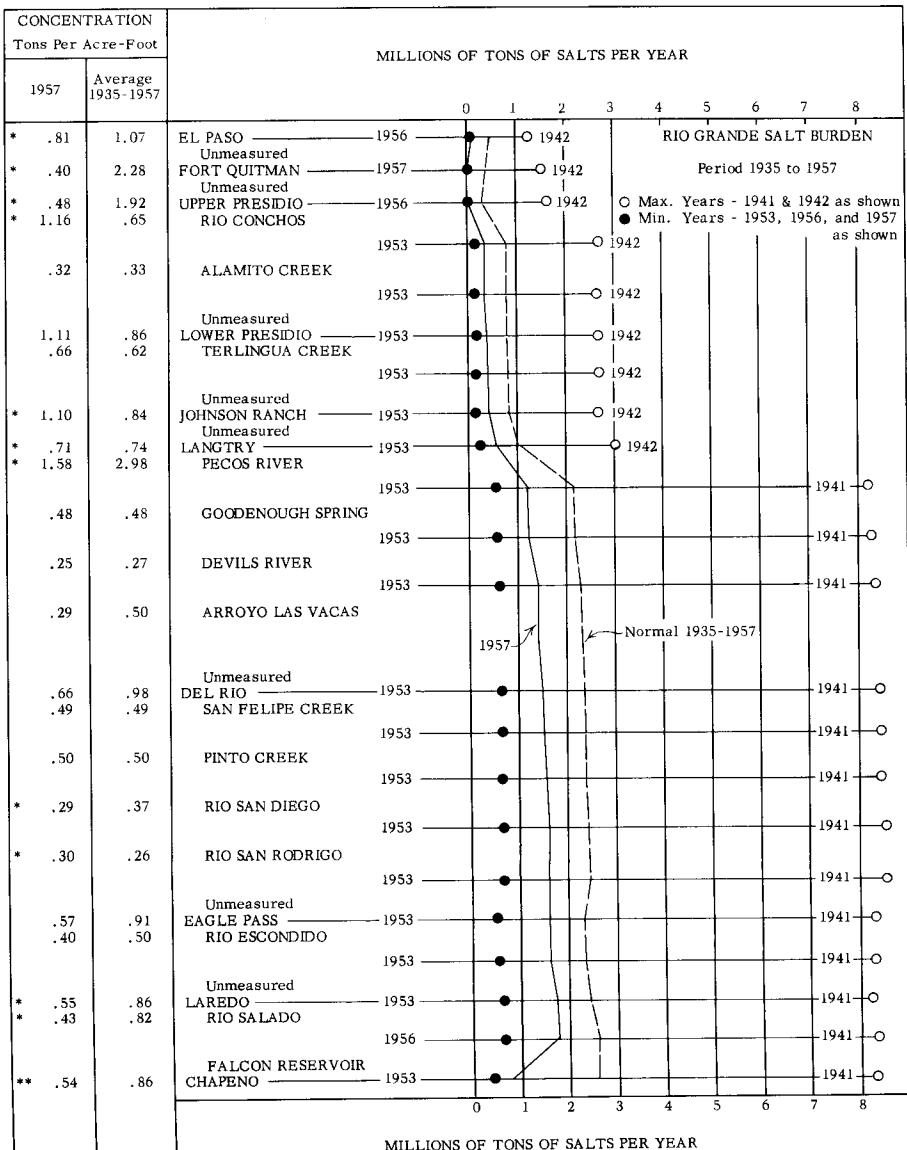
* Samples were taken from the Rio Grande at a point about 200 feet upstream from the confluence of Morillo Drain.

Ø Morillo Drain enters the Rio Grande 8.4 river miles upstream from Anzalduas Dam site. Samples were taken at the railroad bridge about .25 mile upstream from the confluence with the Rio Grande. There was no storm runoff in Morillo Drain on dates these samples were taken.

Samples were taken at the Anzalduas Canal gaging station cableway .5 mile below the canal intake.

RIO GRANDE SALT BURDEN

The term "salt," as used herein, means total dissolved solids. The 1957 concentrations which are marked by an asterisk (*) are based on the chemical analyses shown on preceding pages of this bulletin. Those without asterisks are based on chemical analyses reported in previous water bulletins or have been developed by deduction. Average concentrations shown for the period 1935 to 1957 are the weighted means of the values determined for the 23-year period indicated.



* Based on 1957 chemical analyses of samples collected at stations indicated. ** Based on 1957 chemical analyses of samples collected at Falcon Dam-U.S. Tailrace.

SANITARY ASPECTS OF WATER QUALITY

The United States and Mexican Sections of this Commission and the Texas State Department of Health cooperate in the joint sanitary water-sampling program along the Rio Grande. All analyses below have been made under the "Rules of Laboratory Procedure," as approved by the participating agencies, and which conform with the procedures set out in the manual "Standard Methods for the Examination of Water and Sewage," Ninth Edition (1946), prepared by the American Public Health Association and the American Water Works Association. These analyses were made in the laboratories of the El Paso Water Plant, the Cameron County Health Unit, and the International Boundary and Water Commission. The percentages of dissolved oxygen (D.O.) shown below are the percent saturation at the elevation of the sampling station.

Date 1957	D. O. Percent Saturation	B. O. D. Parts Per Million	Coliform Organisms per 100 c. c.	Total Bacteria per c. c. (plate count)	Date 1957	D. O. Percent Saturation	B. O. D. Parts Per Million	Coliform Organisms per 100 c. c.	Total Bacteria per c. c. (plate count)
--------------	--------------------------------	----------------------------------	--	--	--------------	--------------------------------	----------------------------------	--	--

Franklin Canal at El Paso, Texas, Water Plant

Mar. 26	90.7	4.8	240,000	36,000	Aug. 20	85.3	2.3	6,200	1,900
Apr. 2	78.2	3.2	36,000	31,000	27	78.0	1.7	11,000	15,750
9	97.2	4.7	9,300	28,500	Sept. 3	70.8	1.5	24,000	29,250
16	85.7	3.4	70,000	16,400	10	81.9	2.0	24,000	22,500
23	89.5	2.8	3,600	7,500	17	81.9	1.4	11,000	32,000
June 11	87.5	4.6	23,000	28,000	24	75.6	.7	11,000	13,000
18	82.6	3.9	220,000	22,000	Oct. 1	85.3	1.0	24,000	47,000
25	89.6	5.0	55,000	24,000	8	104	6.4	6,200	216,000
July 2	90.4	3.5	14,000	27,000	15	86.0	1.5	11,000	48,500
9	75.4	.6	2,300	3,400	22	84.8	2.7	70,000	170,000
16	78.0	1.2	3,600	12,500	29	83.0	2.5	3,600	74,000
23	82.5	1.5	5,500	13,500					
30	88.3	2.4	24,000						
Aug. 6	86.8	2.6	6,200	9,300	Total	2,207.7	70.9	916,600	931,950
Aug. 13	88.7	3.0	2,100	2,950	Avg.	84.9	2.7	35,300	37,300

Rio Grande at El Paso, Texas, Water Plant

Mar. 12	93.6	3.0	3,600	4,000	Nov. 19	100	2.5	3,600	48,000
19	92.7	7.9	11,000	7,100	26	49.5		140,000	95,000
May 7	91.0	4.0	62,000	108,000	Dec. 10	103	2.8	6,200	42,500
14	150	7.4	20,000	68,500	17	97.8	1.8	38,000	> 300
21	134	7.6	3,600	27,500	24	97.4	2.5	38,000	29,000
28	157	7.4	6,200	20,000	31	92.0	2.9	24,000	100,000
June 4	156	4.3	1,100	58,000					
Nov. 5	133	2.4	3,600	16,000	Total	1,646.9	57.5	364,500	623,900
12	99.9	1.0	3,600		Avg.	110	4.1	24,300	44,600

Rio Grande at Ysleta, Texas-Zaragoza, Chih. Bridge

Jan. 2	34.9	22.8	23,000,000	5,400,000	July 16	31.2	4.6	3,400,000	3,500,000
8	38.4	22.6	36,000,000	8,600,000	23	22.7	14.0	70,000,000	6,750,000
15	26.7	26.5	36,000,000	4,700,000	30	10.9	40.9	> 240,000,000	
22	21.2	39.3	110,000,000	2,900,000	Aug. 13	59.1	16.7	14,000,000,000	1,100,000,000
29	19.3	36.7	110,000,000	4,000,000	20	54.6	14.2	420,000,000	17,500,000
Feb. 5	23.5	36.3	62,000,000	2,100,000	27	58.6	12.3	2,400,000,000	12,500,000
12	0	37.7	23,000,000	3,900,000	Sept. 3	54.6	18.1	350,000,000	30,000,000
19	0	29.8	11,000,000	5,700,000	10	36.6	25.9	1,100,000,000	15,000,000
26	0	27.0	23,000,000	4,300,000	17	61.3	7.4	110,000,000	22,500,000
Mar. 5	0	29.7	36,000,000	5,600,000	24	66.0	5.5	36,000,000	70,500,000
12	0	> 74.4	94,000,000	4,400,000	Oct. 1	12.8	9.4	> 2,400,000,000	300,000,000
19	0	49.9	23,000,000	3,900,000	8	31.9	34.9	> 24,000,000,000	815,000,000
26	0	44.4	62,000,000	5,900,000	15	62.2	22.9	26,000,000	
Apr. 2	0	76.4	62,000,000	6,000,000	22	45.8	26.7	13,000,000	25,500,000
9	68.8	33.5	11,000,000	6,050,000	29	28.4	71.0	160,000,000	2,000,000
16	7.8	40.1	> 24,000,000	3,200,000	Nov. 5	50.5	11.6	23,000,000	8,500,000
23	42.7	33.9	36,000,000	9,050,000	12	19.2	7.4	16,000,000	3,000,000
May 7	30.7	32.5	> 2,400,000,000	29,400,000	19	26.7	34.4	23,000,000	6,500,000
14	31.9	17.3	> 24,000,000,000	2,500,000,000	26	29.7	24.8	38,000,000	15,250,000
21	36.0	24.4	1,300,000,000	24,000,000	Dec. 10	21.8	27.6	22,000,000	6,000,000
28	0	31.7	36,000,000	110,000,000	17	8.5	34.9	140,000,000	640,000
June 4	57.9	44.8	> 24,000,000,000	1,665,000,000	24	6.7	48.0	38,000,000	13,900,000
11	80.8	44.5	> 24,000,000,000	1,355,000,000	31	18.8	43.2	38,000,000	12,200,000
18	17.9	13.1	> 24,000,000,000	1,800,000,000					
25	20.4	6.8	1,100,000,000	180,000,000					
July 2	61.8	18.2	550,000,000	225,000,000	Total	1,478.7	1,496.7	147,842,400,000	10,468,440,000
9	39.4	46.0	8,000,000	7,600,000	Avg.	29.6	29.9	2,957,000,000	218,100,000

SANITARY ASPECTS OF WATER QUALITY

Date 1957	Coliform Organisms per 100 c. c.	Total Bacteria per c. c. (plate count)	Date 1957	Coliform Organisms per 100 c. c.	Total Bacteria per c. c. (plate count)	Date 1957	Coliform Organisms per 100 c. c.	Total Bacteria per c. c. (plate count)
--------------	--	--	--------------	--	--	--------------	--	--

Rio Grande at Laredo, Texas, Water Plant

Jan. 7	160	750	May 13	22,000	98,000	Sept. 16	2,400	3,450
14	230	1,105	20	11,000	230,000	23	> 240,000	251,500
21	360	690	27	11,000	117,000	30	3,600	12,600
28	620	1,600	June 3	930	62,000	Oct. 7	2,300	5,200
Feb. 4	620	4,350	10	1,100	83,500	14	11,000	52,000
11	210	1,150	17	2,300	1,800	21	16,000	12,650
18	2,300	3,400	24	1,100	1,800	28	9,400	36,050
25	6,200	2,700	July 1	360	5,450	Nov. 4	3,600	14,950
Mar. 4	1,600	3,800	8	620	850	12	21,000	23,000
11	2,300	3,000	15	93	500	18	600	1,500
18	210	2,600	22	160	900	25	1,100	150
25	210	4,300	29	1,600	950	Dec. 2	160	850
Apr. 1	360	350	Aug. 5	110	800	9	230	450
8	360	1,000	12	2,400	1,700	16	160	500
15	6,200	11,700	19	1,100	950	23	110	305
22	24,000	55,500	26	3,800	1,600			
29	1,100	86,000	Sept. 3	2,400	2,550			
May 6	620	123,500	9	2,400	4,000	Total	423,793	1,337,000
						Average	8,310	26,200

Rio Grande at 8.6 Miles Below Laredo, Texas, R. R. Bridge

Jan. 7	240,000	30,500	May 13	36,000	77,500	Sept. 23	380,000	195,000
14	700,000	46,500	20	2,300	50,000	30	110,000	48,500
21	11,000	45,500	June 3	4,200	80,000	Oct. 7	380,000	165,000
28	94,000	35,000	10	2,400	26,500	14	62,000	65,000
Feb. 4	110,000	20,000	17	94,000	23,000	21	62,000	91,000
11	240,000	138,000	24	36,000	15,000	28	62,000	69,000
18	380,000	148,000	July 1	16,000	41,000	Nov. 4	36,000	63,000
25	110,000	21,500	8	380,000	123,500	12	240,000	34,000
Mar. 4	110,000		15	62,000	104,500	18	110,000	51,000
11	240,000	100,000	22	380,000	110,000	25	55,000	46,500
18	240,000	148,000	29	23,000		Dec. 2	62,000	22,000
25	110,000	37,500	Aug. 5	240,000	56,000	9	62,000	31,500
Apr. 1	380,000	73,500	12	62,000	88,500	16	36,000	11,000
8	240,000	122,000	19	23,000	407,000	23	2,300	8,500
15	62,000	37,000	26	23,000				
22	36,000	141,500	Sept. 4	240,000	80,500	Total	7,152,200	3,457,000
29	62,000	101,500	9	62,000		Average	143,000	76,800
May 6	62,000	27,000	17	380,000				

Rio Grande at Falcón Dam-U.S. Tailrace

Jan. 7	60	950	June 17	1,600	150	Sept. 30	110	1,050
14	36	460	July 1	620	1,550	Oct. 14	26	600
21	11	520	8	36	850	28	80	650
28	26	1,150	15	620	1,550	Nov. 4	620	200
Feb. 4	62	450	22	620	300	12	160	350
11	49	445	29	16	450	18	160	300
Mar. 11	620	950	Aug. 5	2,400	1,150	Dec. 2	26	850
Apr. 22	540	650	12	93	1,300	9	620	500
May 6	160	1,000	19	54	900	16	36	275
13	130	800	26	160	2,050	23	23	415
20	360	350	Sept. 3	1,600	1,850			
27	110	600	9	160	9,500	Total	12,046	36,615
June 10	26	600	16	16	900	Average	335	1,020

Rio Grande at Mercedes, Texas, Pumps

Jan. 7	3,400		May 13	3,600		Sept. 14	1,300	
14	2,300		20	16,000		23	24,000	
21	2,600		27	3,600		30	6,200	
28	360		June 3	38,000		Oct. 7	2,300	
Feb. 4	6,200		10	11,000		14	620	
11	2,300		17	3,600		21	3,600	
18	2,300		24	11,000		28	210	
25	1,600		July 1	11,000		Nov. 5	930	
Mar. 4	1,100		15	6,200		18	6,200	
11	620		15	> 240,000		25	38,000	
18	620		22	6,200		Dec. 3	1,600	
25	1,100		29	3,400		9	2,300	
Apr. 1	6,200		Aug. 5	9,400		16	3,600	
8	2,300		12	6,200		23	230	
15	620		19	38,000				
23	230		26	3,600				
29	140,000		Sept. 3	11,000		Total	760,300	
May 6	70,000		9	3,600		Average	15,200	

RAINFALL ON THE RIO GRANDE WATERSHED
IN INCHES
In the United States

The monthly records for United States rainfall stations, with averages for their periods of record, are tabulated below in their downstream order. These records have not been published elsewhere. On pages 95 and 96, these same stations are listed in alphabetical order, showing the location, elevation, period of record, type of gage in use, tributary or subdivision of the Rio Grande watershed on which the station is located, and the observer. Records of daily rainfall amounts for 1953 through 1957, where available, are on file in the office of the United States Section of this Commission. For daily records prior to 1953, see previous issues of these bulletins.

The averages shown below are based on all available records for each station, through 1957, beginning on the dates indicated in "Location of Rainfall Stations on the Rio Grande Watershed," pages 95 and 96 in this bulletin.

Month	American Dam		Island Station		Fabens-Guadalupe Bridge		County Line		Fort Hancock Bridge	
	1957	Average	1957	Average	1957	Average	1957	Average	1957	Average
Jan.	.23	.43	.18	.33	.13	.36	.05	.40	.10	.40
Feb.	.51	.35	.54	.26	.26	.26	.19	.20	.82	.28
Mar.	.18	.32	.13	.23	.03	.26	.24	.27	.21	.22
Apr.	.11	.26	.01	.21	.10	.30	.02	.29	.17	.37
May	.07	.28	.07	.41	.56	.42	2.11	.45	.20	.61
June	T	.69	0	.50	0	.52	0	.54	T	.84
July	1.42	1.56	.56	1.01	1.53	1.26	.34	1.06	.27	1.21
Aug.	3.31	1.35	1.18	1.23	1.42	1.40	1.38	1.41	2.06	1.61
Sept.	1.09	.80	.22	.79	.13	.90	.12	.99	.47	.91
Oct.	1.85	.70	1.62	.84	1.35	1.01	1.99	.90	2.25	1.09
Nov.	.29	.19	.38	.22	.26	.20	.21	.21	.29	.18
Dec.	.04	.40	0	.36	0	.40	0	.36	0	.43
Yearly	9.10	7.33	4.89	6.39	5.77	7.29	6.65	7.08	6.84	8.15

Month	Madden Arroyo		Guayuco Arroyo		Fort Quitman		Neely Ranch		Moody Bennett	Bill Shannon
	1957	Average	1957	Average	1957	Average	1957	Average	1957	1957
Jan.	.05	.32	.03	.36	.06	.46	.09	.40	.18	.50
Feb.	.95	.18	1.02	.18	1.23	.25	.90	.16	1.03	1.15
Mar.	.09	.13	.08	.13	.23	.21	.37	.16	.03	0
June	.08	.33	.13	.23	.39	.30	.37	.14	T	.15
May	1.36	.53	.46	.39	.63	.44	.22	.42	1.80	.95
June	0	.52	0	.49	0	.75	0	.62	0	0
July	.09	1.20	.65	1.55	1.31	1.53	.72	1.56	.65	1.30
Aug.	1.28	1.73	2.67	1.63	2.78	1.49	3.42	1.63	1.74	1.05
Sept.	.16	.89	.44	1.14	.47	.90	.70	1.30	.09	0
Oct.	1.25	1.16	1.34	1.18	1.48	.83	2.34	1.10	1.88	2.20
Nov.	.20	.13	.13	.14	.28	.21	.27	.13	.05	0
Dec.	0	.38	.02	.39	.10	.34	0	.37	0	0
Yearly	5.51	7.50	6.97	7.81	8.96	7.71	9.40	7.99	7.45	7.30

Month	Petan Ranch		Adobes Ranch		Livingston Ranch		Presidio (IB&WC Gage)		Quebec Ranch	
	1957	Average	1957	Average	1957	Average	1957	Average	1957	Average
Jan.	.45	.59	.21	.28	0	.36	.10	.20	.35	.46
Feb.	1.15	.21	.61	.14	3.05	.51	.35	.12	1.50	.22
Mar.	.20	.29	0	.17	.30	.11	0	.16	.10	.23
Apr.	0	.19	.16	.20	0	.12	.10	.20	.10	.41
May	2.30	1.02	1.00	.34	0	.38	.50	.32	.90	1.11
June	.75	1.97	.31	1.08	0	1.07	0	.82	.20	1.52
July	3.14	3.17	.69	2.14	1.25	1.25	.10	1.22	2.65	2.01
Aug.	1.00	2.32	.52	.99	.70	1.21	0	.64	2.95	1.72
Sept.	.15	1.58	.18	1.36	0	.62	.10	.55	.10	1.24
Oct.	2.65	1.00	1.90	.58	0	1.12	1.40	.44	2.45	1.03
Nov.	.20	.27	.15	.12	0	.21	.10	.11	.30	.06
Dec.	.30	.28	0	.09	0	.17	0	.14	.60	.24
Yearly	12.29	12.89	5.73	7.49	5.30	7.13	2.75	4.92	12.20	10.25

RAINFALL ON THE RIO GRANDE WATERSHED
IN INCHES
In the United States

Month	Kelly Ranch		Bloys Camp		Marfa Experiment Station		Kerr Mitchell Ranch		Loma Vista Ranch	
	1957	Average	1957	Average	1957	Average	1957	Average	1957	Average
Jan.	0	.52		.63	.67	.53	.61	.59	.90	.88
Feb.	1.60	.21	3.10	.63	2.50	.42	3.38	.38	3.60	.45
Mar.	.10	.27	.40	.41	.10	.28	0	.16	0	.14
Apr.	0	.60	.20	.54	.17	.36	.50	.60	0	.74
May	.70	1.18	2.70	1.78	1.49	.93	1.54	1.16	1.20	.95
June	.20	1.73	.55	2.62	.47	1.50	0	1.65	.65	1.74
July	3.30	3.04	2.70	3.07	1.91	2.05	.51	1.86	1.30	2.19
Aug.	.75	1.57		3.42	.35	1.26	.55	1.85	1.25	1.45
Sept.	2.27	.25		2.46	.22	1.16	.13	1.51	.40	1.54
Oct.		.81	2.25	1.57	2.26	.76	2.23	1.28	2.40	1.23
Nov.		.06	.74	.36	.05	.04	.12	.19	.70	.32
Dec.		.28	.15	.56	.30	.19	.16	.41	0	.50
Yearly		12.54		18.05	10.49	9.48	9.73	11.64	12.40	12.13

Month	H. T. Fletcher Ranch		Sauz Ranch		McFarland Ranch-Shannon		McFarland Ranch-Cement		McFarland Ranch-Headquarters	
	1957	Average	1957	Average	1957	Average	1957	Average	1957	Average
Jan.	.70	.86	.60	.64	1.29	1.52	1.25	1.47	1.29	1.01
Feb.	2.20	.24	2.45	.26	5.59	2.03	5.99	2.16	5.74	.62
Mar.	.27	.28	.30	.41	0	0	0	0	0	.31
Apr.	.50	.56	.50	.31	.33	.11	.60	.20	.33	.60
May	2.40	1.24	3.45	1.30	1.81	1.00	2.42	1.13	2.61	1.39
June	0	1.31	0	1.16	1.60	1.36	1.65	1.43	1.37	1.08
July	2.15	2.73	1.10	2.63	3.75	3.75	2.50	3.19	4.35	3.37
Aug.	2.35	2.87	1.00	2.29	3.30	2.88	3.60	2.75	2.15	2.55
Sept.	1.10	1.46	.10	1.80	0	1.74	0	1.51	0	1.93
Oct.	2.20	1.44	2.45	1.44	3.00	3.00	2.90	2.83	3.15	1.65
Nov.	.05	.28	.05	.28	1.45	.75	1.50	.77	1.30	.46
Dec.	0	.36	0	.46	0	.22	0	.20	0	.55
Yearly	13.92	13.63	12.00	12.98	22.12	18.36	22.41	17.64	22.29	15.52

Month	McFarland Ranch-Casa Colorado		McFarland Ranch-Deep Well		McFarland Ranch-Cane Pasture		McFarland Ranch-Punta el Aguia		McFarland Ranch-Cocameca	
	1957	Average	1957	Average	1957	Average	1957	Average	1956	1957
Jan.	1.16	1.42	1.32	1.51	1.10	1.31	1.32	1.42		1.17
Feb.	5.85	2.12	7.90	2.80	6.08	2.19	5.55	2.02		6.10
Mar.	0	0	0	0	0	0	0	0		0
Apr.	.35	.28	.55	.22	.25	.25	.30	.27		.55
May	2.59	1.18	2.37	1.09	2.44	1.38	2.42	1.12		2.87
June	1.10	.73	2.00	1.58	.60	.74	.65	.57		1.60
July	3.17	2.87	3.00	3.11	3.18	2.47	3.58	2.06		3.05
Aug.	3.70	2.75	5.50	3.86	3.50	2.26	5.20	2.82		4.65
Sept.	0	.96	0	1.74	0	1.64	0	1.13		0
Oct.	2.90	2.73	4.00	4.40	2.65	2.38	2.70	2.02		3.65
Nov.	1.20	.67	1.55	.78	1.08	.61	1.05	.60		1.10
Dec.	0	.22	0	.18	0	.20	0	.20		.55
Yearly	22.02	15.93	28.19	21.27	20.88	15.43	22.77	14.23		24.74

Month	N. B. Chaffin Ranch		A. L. Baugh Ranch		L. T. Van Eman Ranch		San Jacinto Ranch		McCracken Ranch	
	1957	Average	1957	Average	1957	Average	1957	Average	1957	Average
Jan.		.52	.57	.63	.25	.46	.72	.58		.61
Feb.	3.00	.45	2.19	.29	0	.08	1.50	.35	2.32	.28
Mar.	0	.25	1.40	.33	0	.29	.20	.88	0	.15
Apr.	0	.37	.40	.32	1.75	.46	0	.10	.17	.50
May	.50	.62	.45	.66	.50	.49	.61	.25	.55	.73
June	.25	1.21	.20	1.14		1.40	.45	.89	0	1.17
July	.45	1.27	1.09	1.72		1.97	.45	.89	2.10	2.19
Aug.	1.55	1.30	0	1.56		1.74	1.31	3.08	1.95	2.02
Sept.	1.63	.36	1.29	.24		1.29		1.38	1.78	1.72
Oct.	.30	2.34	1.03			.70		1.12	2.62	1.25
Nov.	.20	.10	.24			.26		0	.40	.28
Dec.	.41	0	.43			.44		0	.12	.46
Yearly		8.53	9.10	9.64		9.58		9.66	12.59	11.36

RAINFALL ON THE RIO GRANDE WATERSHED
IN INCHES
In the United States

Month	H. M. Greenwood (Cienega Ranch)		Redford		02 Ranch		Terlingua Creek Station		Maverick Ranger Station	
	1957	Average	1957	Average	1957	Average	1957	Average	1957	Average
Jan.	.56	.56	.18	.31	.53	.54	.10	.22	.21	.48
Feb.	1.84	.20	.35	.12	1.88	.41	.55	.13	.82	.29
Mar.	.25	.19	0	0	0	.39	0	.16	.20	.07
Apr.	.21	.65	.40	.13	.64	.39	.10	.63	.08	.08
May	.64	.77	.95	.38	1.17	1.12	1.20	.63	1.38	.93
June	.15	1.54	0	.13	.77	1.25	0	.67	.07	.53
July	.98	1.73	.10	.08	.59	1.62	0	.64	.49	1.40
Aug.	.98	1.76	0	.84	.33	2.59	0	.52	.20	.46
Sept.	.40	2.06	0	.75	.26	1.67	.25	.50	.73	1.23
Oct.	3.15	1.24	2.15	.59	1.89	1.72	1.05	.39	1.83	.88
Nov.	.41	.25	.20	.11	.05	.65	0	.07	.09	.08
Dec.	.22	.52	0	0	.29	.36	0	.16	.09	.04
Yearly	9.79	11.47	4.33	3.44	8.40	12.71	3.25	4.72	6.19	6.47

Month	Johnson Ranch		Buttrill Ranch		Santiago Peak Ranch		Maravillas Gap Ranch		Ray Willoughby Ranch	
	1957	Average	1957	Average	1957	Average	1957	Average	1957	Average
Jan.	.19	.43	.04	.49	.30	.58	.38	.94	.75	.47
Feb.	1.25	.16	1.96	.42	3.00	.60	2.18	1.09	3.45	.62
Mar.	0	.18	0	.09	0	.01	.27	.14	.25	.29
Apr.	.70	.56	1.02	.74		.55	.80	.40	.30	.52
May	2.40	.98	.04	.83		.70	1.38	.81	.60	1.07
June	0	1.12	0	.72		1.62	.39	.50	3.20	1.60
July	.50	1.21	.90	1.14	1.80	.76	.51	.76	2.35	2.93
Aug.	.10	.83	0	.42		2.38	2.50	1.38	0	2.11
Sept.	0	1.24	0	.32		.80	0	.02	2.20	1.34
Oct.	.55	.55	1.94	.47		.74	2.00	1.52	1.25	.61
Nov.	0	.20	.20	.32		.09	0	0	.30	.15
Dec.	0	.29	0	T		T	0	.03	.10	.10
Yearly	5.69	7.75	6.10	5.96		8.83	10.41	7.59	14.75	11.81

Month	J. F. Woodward Ranch		Kokernot Ranch - Headquarters		Kokernot Ranch - No. 2		A. M. Potter Ranch		Sand Valley Ranch	
	1957	Average	1957	Average	1957	Average	1957	Average	1957	Average
Jan.	.55	.59	.40	.34	.40	.40	.25	.12	.50	.54
Feb.	2.88	.73	2.84	.47	1.80	.22	1.50	.25	1.10	.33
Mar.	.19	.05	0	.12	0	.21	0	T	T	.29
Apr.	.79	.92	0	.46	0	.48	0	.33	0	.18
May	1.24	1.33	1.83	.53	1.55	.50	.70	.69	1.72	.88
June	2.37	1.47	.26	.69	.30	.87	0	.67	0	1.16
July	1.71	1.24	0	.95	0	1.37	2.35	1.18	.42	1.31
Aug.	.90	2.60	0	.90	0	1.33	0	.37	0	.34
Sept.	1.51	1.27	0	.50	0	1.40	1.70	1.27	0	.69
Oct.	1.59	.71	1.50	.66	1.50	.76	.30	.16	1.11	.59
Nov.	.05	.10	.70	.30	.70	.20	.40	.14	.61	.30
Dec.	.18	.11	0	.10	0	.19	0	.06	.10	.23
Yearly	13.96	11.12	7.53	6.02	6.25	7.93	7.20	5.24	5.56	6.84

Month	Persimmon Gap Ranger Station		Black Gap Game Refuge		Dove Mountain Ranch		Tesnus		Garner Ranch	
	1957	Average	1957	Average	1957	Average	1957	Average	1957	Average
Jan.	.23	.36	.20	.26	.62	.43	Record began	.21	.48	
Feb.	1.87	.34	2.09	.50	.13	2.26	January 1, 1957	2.00	.24	
Mar.	.06	.15	.22	.22	.22	.17		0	.14	
Apr.	.11	.51	.41	.46	.06	.42		.13	.55	
May	1.46	.72	.62	.84	1.93	.85		.152	1.04	
June	T	1.10	.52	.57	1.93	1.15	1.82	.07	.88	
July	.57	1.10	.95	.71	.50	.67	3.78	1.50	.79	
Aug.	.20	.50	.49	.50	0	.32	0	0	1.01	
Sept.	1.00	.65	.81	.99	1.00	.90	.66	.11	.76	
Oct.	1.52	.46	1.04	.18	0	.25	2.40	2.82	1.11	
Nov.	.22	.15	.22	.22	.85	.26	.70	.25	.12	
Dec.	.18	.14	.20	.26	.35	.30	.22	0	.11	
Yearly	7.42	6.18	7.77	5.71		6.09	14.17	8.61	7.23	

RAINFALL ON THE RIO GRANDE WATERSHED
IN INCHES
In the United States

Month	Steve Stumberg Ranch		McGonagill Ranch Headquarters		McGonagill Ranch East Mill		Arvin and Harkins Header		Arvin and Harkins Bean	
	1957	Average	1957	Average	1957	Average	1957	Average	1957	Average
Jan.	.40	.70	.45	.27	.30	.27	.70	.48	.40	.48
Feb.	2.90	.39	6.45	1.31	.02	4.00	.54	4.20	.51	
Mar.	.30	.20	.97	.42	.95	.45	.10	.31	.30	.32
Apr.	1.60	.78	.40	.56	.80	.83	1.60	1.56	1.20	1.50
May	1.10	1.65	.46	.84	.50	.61	.70	1.49	.70	1.27
June	.20	1.07	1.62	1.62	1.70	1.22	.20	1.31	.20	1.27
July	3.50	1.77	1.82	1.36	3.00	1.05	.60	.83	.70	.81
Aug.	2.35	1.26	0	1.20	0	.72	0	1.32	0	1.42
Sept.	.40	1.72	1.36	.72	.70	.87	1.00	1.18	1.60	1.10
Oct.	2.40	1.04	1.58	.38	1.60	.43	2.20	1.32	2.20	1.52
Nov.	.55	.42	1.00	.28	1.30	.32	.70	.29	.90	.22
Dec.	.48	.68	0	.17	0	.38	.20	.26	.20	.30
Yearly	16.18	11.68	16.11	9.13		7.17	12.00	10.89	12.60	10.72

Month	Arvin and Harkins Camel		Arvin and Harkins Headquarters		Arvin and Harkins Monty Corder		E. W. Hardgrave Ranch		Adams Bros. Ranch	
	1957	Average	1957	Average	1957	Average	1957	Average	1957	Average
Jan.	.40	.33	.40	.48	.50	.48	.51	.47	.16	.39
Feb.	3.30	.41	3.20	.44	3.20	.42	3.05	.64	2.18	.46
Mar.	.60	.34	.30	.30	.50	.37	.20	.23	.59	.27
Apr.	2.00	1.48	1.30	1.34	1.90	1.44	1.35	1.18	.98	.86
May	1.30	1.13	1.00	1.52	1.80	1.23	2.83	1.67	3.53	1.40
June	.20	1.01	.30	1.00	0	1.37	.79	1.20	1.65	1.32
July	.70	.64	1.00	.78	.70	.71	.44	.48	.71	.40
Aug.	.20	.82	.50	1.12	0	.68	0	.50	0	.67
Sept.	2.20	1.01	.90	.97	1.40	1.06	.14	1.08	.86	1.64
Oct.	1.30	1.03	1.90	1.22	1.70	.98	1.74	1.06	1.93	.99
Nov.	.80	.19	.80	.20	1.40	.25	1.08	.37	.67	.29
Dec.	.20	.28	.20	.26	.20	.26	.13	.20	.13	.20
Yearly	13.20	8.67	11.80	9.63	13.30	9.25	12.26	9.08	13.39	8.89

Month	Bricker Ranch		Dryden		Cedar Service Station		Pumpville		C. L. Arthur Ranch	
	1957	Average	1957	Average	1957	Average	1957	Average	1957	Average
Jan.	.21	.28	.09	.58	.18	.38	.18	.51	.92	.95
Feb.	2.02	.44	2.16	.43	2.16	.72	2.02	.42	3.10	.40
Mar.	.76	.35	.37	.37	.49	.16	.81	.45	0	.31
Apr.	2.02	1.67	.99	.89	2.09	.90	3.62	1.30	.15	.45
May	6.71	1.89	3.42	2.07	9.04	3.85	6.62	2.09	.92	1.44
June	.42	1.50	.40	1.01	.48	1.82	0	1.58	.70	1.55
July	.22	.19	0	1.03	.91	.64	0	.32	1.00	2.46
Aug.	0	.31	0	1.25	T	.87	0	.44	.25	1.82
Sept.	1.47	1.29	.13	1.55	1.68	1.13	3.29	1.76	.25	1.38
Oct.	1.62	.88	1.07	1.09	.71	.82	1.27	1.42	1.60	.87
Nov.	.68	.23	.58	.36	1.25	.62	.25	.14	.50	.31
Dec.	.11	.20	.17	.50	.22	.14	0	.48	.10	.20
Yearly	16.24	9.23	9.38	11.13	19.21	12.05	18.06	10.91	9.49	12.14

Month	Hoffman Ranch		Ingram Ranch		Shumla Bend		Martin King Ranch		Comstock	
	1957	Average	1957	Average	1957	Average	1957	Average	1957	Average
Jan.	.75	.65	.70	.59	.70	.45	.15	.32	.23	.64
Feb.	2.52	1.26	2.10	.70	2.15	.78	1.80	.63	1.89	.77
Mar.	0	0	1.37	.46	1.40	.47	.30	.10	.83	.72
Apr.	.12	.22	3.43	1.48	3.80	1.43	3.05	1.19	4.34	1.64
May	1.93	1.32	8.32	4.64	9.48	4.69	7.45	2.95	10.42	2.21
June	.92	.77	T	T	T	.33	.78	.42	1.74	2.06
July	.39	1.78	.25	.40	0	.10	0	.13	.01	.86
Aug.	.29	1.02	0	T	.15	2.35	0	.77	0	1.96
Sept.	.66	.87	1.18	1.87	1.52	.91	1.32	1.39	.99	1.62
Oct.	1.81	1.09	2.18	2.02	2.38	1.34	1.93	1.28	1.45	1.35
Nov.	.86	.37	1.70	.57	1.47	.53	1.66	.59	2.42	.55
Dec.	.15	.21	.78	.29	.48	.19	.55	.21	.54	.80
Yearly	10.40	9.56	22.01	13.02	23.53	13.57	18.99	9.98	24.86	15.18

RAINFALL ON THE RIO GRANDE WATERSHED
IN INCHES
In the United States

Month	Upper Devils		Lucius Hinds Ranch		Devils Lake		Wardlaw Ranch		Diabio Dam Site	
	1957	Average	1957	Average	1957	Average	1957	Average	1957	Average
Jan.	.25	.32	.31	.41	.29	.65	.11	.20	.06	.17
Feb.	1.44	.55	1.77	.68	1.37	.67	1.02	.51	1.01	.35
Mar.	1.09	.36	1.35	.45	1.24	.72	.64	.32	1.10	.37
Apr.	5.26	1.85	4.76	1.77	4.97	1.80	3.91	1.96	3.75	1.27
May	" 5.70	2.31	6.77	2.79	6.40	1.79	3.85	1.95	2.67	1.27
June	T	.58	0	.83	.25	2.05	1.30	.65	.50	.33
July	0	.45	0	0	0	.79	T	T	0	.30
Aug.	0	.82	0	1.37	.02	1.31	.07	1.93	0	1.00
Sept.	1.14	1.34	.76	1.30	1.56	1.51	3.00	1.63	.84	1.25
Oct.	2.11	1.89	1.53	1.58	2.01	1.39	1.54	1.22	1.20	1.88
Nov.	1.23	.56	2.16	.74	1.48	.65	1.32	.87	1.45	.70
Dec.	1.11	.32	1.40	.46	.78	.72	.55	.32	.28	.20
Yearly	19.33	11.35	20.81	12.38	20.37	14.05	17.31	11.56	12.86	9.09

Month	Armistead Ranch		Maverick County Canal Headgate		Quemado		Maverick Power Plant		Tortuga Ranch	
	1957	Average	1957	Average	1957	Average	1957	Average	1957	Average
Jan.	.33	.26	.03	.34	.40	.77	.20	.33	0	.22
Feb.	1.85	.67	1.03	1.11	1.20	1.18	1.57	.52	1.46	.29
Mar.	2.05	1.07	.97	.64	2.96	.83	3.26	1.20	.44	.47
Apr.	5.07	2.04	8.10	1.72	4.87	1.56	7.56	1.96	10.64	1.94
May	5.09	2.06	8.84	2.21	8.83	2.74	6.20	2.56	7.62	3.65
June	.65	2.09	1.00	1.51	.90	1.53	.94	1.39	0	.76
July	T	.66	0	1.58	0	1.09	0	.95	0	1.07
Aug.	.30	1.94	.70	1.56	.60	1.62	.42	1.80	0	2.68
Sept.	3.70	3.68	3.80	2.39	1.59	2.50	3.97	1.92	3.86	2.51
Oct.	3.90	2.56	2.48	1.49	2.73	1.54	3.58	1.23	3.88	.86
Nov.	2.45	.89	1.55	.48	1.40	.60	1.13	.72	.99	.37
Dec.	1.20	.41	.70	.52	.69	.56	1.24	.46	1.76	.37
Yearly	26.59	18.33	29.20	15.55	26.17	16.52	30.07	15.04	30.65	15.19

Month	El Indio		Wuensche Farm		Cuervo Creek		Apache Ranch		Justapor Ranch	
	1957	Average	1957	Average	1957	Average	1957	Average	1957	Average
Jan.	.15	.71	.20	.35	.20	.58	0	.28	0	.24
Feb.	2.50	.79	2.67	1.04	1.70	.72	2.30	.75	1.50	.54
Mar.	.95	.59	1.66	.66	.70	.18	T	0	.17	
Apr.	6.67	1.38	4.70	1.75	3.80	1.66	2.45	1.51	7.90	2.60
May	5.00	3.57	4.11	2.53	4.30	2.32	5.10	2.51	1.00	2.14
June	0	1.48	1.05	.77	1.00	.91	T	.04	T	.90
July	0	.63	0	.65	0	.56	T	1.56	0	.32
Aug.	0	2.16	.10	1.19	T	1.76	0	2.90	0	1.01
Sept.	5.38	2.86	4.23	2.42	4.00	2.07	7.70	3.50	2.75	1.36
Oct.	5.30	1.15	3.89	1.12	3.60	1.50	2.50	2.19	1.02	1.64
Nov.	1.66	.54	1.80	.68	1.97	.72	2.10	.42	2.90	.92
Dec.	1.70	.69	1.60	.42	1.30	.40	3.30	.76	3.10	1.04
Yearly	29.31	16.55	26.01	13.58	22.57	13.38	25.45	16.42	20.17	12.88

Month	Santa Ysabel Farm		Laredo Water Plant		Fort McIntosh		Corralitos Ranch		Huisache Ranch	
	1957	Average	1957	Average	1957	Average	1957	Average	1957	Average
Jan.	.34	.28	.37	.78	.09	.69	.10	.10	.30	.29
Feb.	1.31	.49	1.38	.67	1.45	.81	.80	.28	1.20	.52
Mar.	.25	.26	.13	.62	.29	.75	.70	.17	2.00	.56
Apr.	2.35	1.04	1.50	1.10	1.26	1.32	1.38	1.05	1.53	1.00
May	4.32	2.26	5.10	2.58	3.92	2.70	.36	.93	.21	.86
June	2.39	.94	1.24	2.05	1.80	2.08	3.20	1.19	3.15	1.48
July	0	.15	0	1.18	0	1.43	0	.43	0	.76
Aug.	T	3.35	.64	1.45	.83	1.70	1.10	2.44	.40	1.64
Sept.	3.13	1.88	2.86	2.89	2.62	2.75	2.50	1.60	1.70	2.11
Oct.	1.10	1.59	.74	1.44	1.00	1.59	.20	1.27	.40	1.84
Nov.	3.01	1.25	2.47	.81	2.54	1.15	1.40	.62	2.10	1.01
Dec.	2.30	.60	1.05	.97	1.17	.87	.71	.25	.92	.42
Yearly	20.50	14.09	17.48	16.54	16.97	17.84	12.45	10.33	13.91	12.49

^a Estimated

**RAINFALL ON THE RIO GRANDE WATERSHED
IN INCHES**
In the United States

Month	Zapata Water Plant		Arroyo Tigre Chiquito		Falcón Dam		Roma		Garcia-ville	Los Ebanos
	1957	Average	1957	Average	1957	Average	1957	Average	1957	1957
Jan.	.12	.22	.20	.40	.13	.23	.04	.67		
Feb.	1.18	.38	1.40	.70	1.39	.42	3.21	.87	(Record began	
Mar.	2.22	.63	.90	.30	3.24	1.12	2.12	.99	4-1-57)	4-1-57)
Apr.	2.89	1.30	2.65	1.64	4.31	1.32	3.20	1.38	4.03	7.04
May	.28	1.65	.26	1.13	.83	1.81	2.70	1.68	1.06	.45
June	3.72	1.45	4.05	1.91	2.37	1.53	2.19	2.14	4.33	4.13
July	0	.67	0	.36	.04	.41	0	.90	0	0
Aug.	1.46	2.06	1.00	.84	1.30	2.25	.50	2.07	.02	.10
Sept.	1.34	2.59	1.90	2.30	.63	2.28	1.32	3.09	.39	.03
Oct.	.79	1.21	.60	1.20	.31	1.47	.41	2.23	.11	2.10
Nov.	1.88	.98	2.60	1.21	3.30	.83	2.47	.59	1.84	1.42
Dec.	.80	.38	.78	.30	.85	.33	.36	.37	.35	0
Yearly	16.68	13.52	16.34	12.29	18.70	14.00	18.52	16.98		

Month	La Joya		HCWCID #6		Peñitas		Mission Pump		O. C. Dale Farm		HCWCID #15	
	1957	1957	1957	Average	1957	1957	Average	1957	Average	1957	1957	Average
Jan.	(Record began	.04	.24	(Record began	.11	.14	.19	.39	.16	.19		
Feb.	2.61	.88	.85	2.71	.85	2.31	.84	2.25	.74			
Mar.	2.17	.68	7-1-57)	2.17	.80	2.01	.63	3.03	.94			
Apr.	4.16	2.33	1.55	1.65	1.50	1.72	1.96	2.12	1.48			
May	1.58	2.28	1.55	2.48	1.34	.51	1.64	1.67	1.46			
June	2.54	2.08	1.32	4.32	1.90	2.12	2.14	3.27	2.01			
July	0	.54	0	0	1.05	1.05	.93	0	.88			
Aug.	0	.14	1.90	0	1.60	.03	1.44	.13	1.36			
Sept.	.37	.26	1.70	.06	.89	1.22	.58	1.63	1.66	2.50		
Oct.	1.06	.10	2.62	1.77	.03	2.65	.03	2.78	0	1.57		
Nov.	2.10	2.46	1.05	1.86	2.20	1.08	2.86	1.31	2.75	.98		
Dec.	0	.98	.46	1.07	2.09	.78	1.66	.74	2.47	.68		
Yearly		15.45	14.49		18.65	14.91	14.02	16.43	19.51	14.79		

Month	Edinburg Filtration Plant		HCWID #6		Murse Farm		CCWCID #3 (Avg. of 6 gages)		La Feria Pumping Plant	
	1957	Average	1957	Average	1957	Average	1957	Average	1957	Average
Jan.	.21	.24	.13	.21	.27	.10	.24	0	.21	
Feb.	2.66	.80	2.60	.89	4.50	1.18	2.15	.78	2.65	.79
Mar.	2.71	.78	2.70	.69	3.35	.93	3.71	.80	3.60	.78
Apr.	3.99	2.21	4.73	2.24	8.30	2.98	4.18	2.51	2.40	1.96
May	.49	1.44	1.59	1.41	1.80	1.39	3.53	1.74	3.61	1.95
June	3.82	1.98	3.82	2.10	4.50	2.15	5.28	2.68	3.60	2.25
July	.02	.64	0	1.28	.10	.86	.30	1.10	.20	1.55
Aug.	.33	1.25	.15	1.41	.90	3.47	.03	3.16	1.00	2.12
Sept.	1.51	2.09	2.53	2.55	2.45	5.30	1.24	5.34	1.10	5.64
Oct.	.10	2.05	0	1.80			.11	2.42	.20	3.62
Nov.	2.52	1.10	2.52	1.22	Discontinued		3.39	1.67	3.35	1.57
Dec.	1.86	.58	2.00	.63			1.33	.50	2.10	.62
Yearly	20.22	15.16	22.77	16.43			25.35	22.94	23.81	23.06

Month	CCWCID #19		San Benito Pump		Whipple Farm		CCWID #11 (Avg. of 18 gages)		Los Fresnos Pump	
	1957	Average	1957	Average	1957	Average	1957	Average	1957	Average
Jan.	.06	.25	0	1.12	.25	.40	0	.29	0	.25
Feb.	2.17	.72	2.52	.69	2.80	.95	3.30	1.03	2.80	1.23
Mar.	2.55	.60	2.85	1.05	2.90	.78	2.71	1.18	2.30	.58
Apr.	2.12	1.75	1.82	1.24	2.15	1.98	2.80	1.70	1.90	1.89
May	3.23	1.60	2.70	2.42	1.82	2.62	1.47	1.08	1.50	1.49
June	4.94	2.51	4.18	2.34	8.93	2.61	4.94	1.75	6.40	4.22
July	.37	.77	.24	1.59	0	2.51	0	1.44	.20	1.99
Aug.	0	2.41	0	2.11	.18	1.92	.40	2.47	1.00	1.95
Sept.	.72	3.56	1.76	3.78	2.78	4.63	* 1.29	4.10	1.95	5.42
Oct.	.18	1.75	.31	2.14	.75	2.18	0	2.19	.60	3.72
Nov.	2.84	1.40	3.20	.88	3.16	2.16	3.73	1.85	4.70	2.08
Dec.	1.45	.54	0	1.29	1.80	.60	.66	.44	1.85	.50
Yearly	20.63	17.86	19.58	20.65	27.52	23.34	21.30	19.52	25.20	25.32

* Partly estimated

RAINFALL ON THE RIO GRANDE WATERSHED
IN INCHES
In Mexico

The monthly records for Mexican rainfall stations, with averages for their periods of record, are tabulated below in their downstream order. These records have not been published elsewhere. On pages 97 and 98, these rainfall stations are listed in alphabetical order, showing the location, elevation, period of record, type of gage in use, tributary or subdivision of the Rio Grande watershed on which the station is located, and the observer. Records of daily rainfall at all stations operated by the Mexican Section of this Commission appear in their issue of Water Bulletin No. 27; for all other stations, the daily records are on file in the office of the Mexican Section.

The averages shown below are based on all available records for each station, beginning on the dates indicated in "Location of Rainfall Stations on the Rio Grande Watershed," pages 97 and 98, through 1957.

Month	Juárez, Chihuahua		Félix U. Gómez, Chihuahua				Bachiniva, Chihuahua			
	1957	Average	1955	1956	1957	Average	1952	1953	1954	1955
Jan.	.28	.36	.59	.37	.10	.35	.53	0	.11	.41
Feb.	.60	.41	T	.24	.65	.30	.05	.08	.20	0
Mar.	.15	.34	0	0	.39	.13	.94	.77	.08	0
Apr.	.11	.38	0	0	.51	.17	.59	.30	0	0
May	.31	.42	.06	0	.08	.05	.18	.24	0	.10
June	0	.65	0	.18	0	.06	3.44	1.32	1.52	.24
July	1.26	1.27	1.52	2.80	3.62	2.65	6.69	7.58	6.14	6.08
Aug.	5.03	1.61	3.78	2.24	3.27	3.10	3.60	2.50	5.31	6.20
Sept.	0	1.23	1.93	.12	.35	.80	.43	.20	1.65	1.91
Oct.	2.26	1.10	1.65	0	2.13	1.26	.10	.14	1.50	1.63
Nov.	.41	.55	T	.24	.63	.29	.65	0	0	.37
Dec.	.03	.54	0	.10	.55	.22	.37	.39	0	0
Yearly	10.44	8.86	9.53	6.29	12.28	9.38	17.57	13.52	16.51	16.94

Month	Bachiniva, Chihuahua			Cd. Guerrero, Chihuahua		La Junta, Chihuahua		Siquirichic, Chihuahua		
	1956	1957	Average	1957	Average	1957	Average	1956	1957	Average
Jan.	.51	1.85	.57	1.87	.59	2.24	1.08	0	.20	
Feb.	0	0	.06	.02	.39	.03	.50	.75		
Mar.	0	.33	.35	.49	.20	.91	.30	T		
Apr.	0	0	.15	T	.17	.48	.19	T		
May	0	.28	.13	.59	.26	.10	.25	T		
June	.73	0	1.21	.51	1.60	.40	1.51	.39		
July	5.39	5.08	6.16	4.00	4.47	4.55	5.20	.55	2.36	1.46
Aug.	2.58	6.99	4.53	5.54	5.02	7.03	4.89	2.52	11.52	7.02
Sept.	1.34	.87	1.07	2.11	3.10	3.04	2.22	3.82	1.65	2.74
Oct.	0	2.80	1.03	1.65	1.22	.70	1.28	2.01	.39	1.20
Nov.	0	.08	.18	.24	.50	.01	.32	.39	0	.20
Dec.	.08	0	.14	T	.68	.35	.82	.20	.39	.30
Yearly	10.63	18.28	15.58	17.02	18.20	19.84	18.56		17.65	

Month	Cuauhtémoc, Chihuahua		Balleza, Chihuahua		El Vergel, Chihuahua		El Sitio, Chihuahua			
	1957	Average	1957	Average	1957	Average	1955	1956	1957	Average
Jan.	.16	.28	.16	.28	.98				.28	.24
Feb.	.08	.12	T	.36	.31			T	.04	.02
Mar.	.12	.11	.57	.09	1.93			0	.16	.08
Apr.	T	.20	T	.18	.49			0	.04	.02
May	.83	.21	.35	.15	.28			.35	1.69	1.02
June	T	1.44	.74	1.14	.87			1.93	.63	1.28
July	3.31	4.86	3.63	4.48	4.76		5.20	2.40	3.11	3.57
Aug.	5.49	4.01	5.63	4.51	7.15		8.31	1.14	3.78	4.41
Sept.	1.18	2.31	.89	3.30	1.76		2.17	3.11	2.60	2.63
Oct.	.94	1.14	.43	.72	1.24		.24	0	.59	.28
Nov.	T	.17	.12	.53	.02		T	0	T	T
Dec.	.08	.41	T	.41	1.95		0	.47	.08	.18
Yearly	12.19	15.26	12.52	16.15	21.74			9.68	12.92	13.73

**RAINFALL ON THE RIO GRANDE WATERSHED
IN INCHES**
In Mexico

Month	El Maguey, Chihuahua				San Isidro, Chihuahua		Santa Rita, Chihuahua			
	1955	1956	1957	Average	1957	Average	1956	1957	Average	
Jan.		.18	.18	.18					.28	
Feb.	T	.10	.05					1.00		
Mar.	0	.26	.13					.04		
Apr.	0	.06	.03					0		
May	T	.93	.46					.08	.04	.06
June	1.81	.53	1.17					.39	0	.20
July	7.97	2.32	4.86	5.05				1.38	1.93	1.66
Aug.	6.18	.85	4.04	3.69	3.94			0	1.38	.69
Sept.	2.22	3.37	2.22	2.60	.39			.63	.20	.41
Oct.	.67	0	.24	.30	.63			.30		
Nov.	T	.49	T	.16	.12					
Dec.	0	.12	.08	.07	.20					
Yearly		9.14	13.50	13.89						

Month	La Boquilla, Chihuahua		Ojo Caliente, Chihuahua		San Antonio, Durango		Jiménez, Chihuahua			
	1957	Average	1957	Average	1957	Average	1951	1952	1953	1956
Jan.	.16	.30	.20	.10	.20	.31	0	0	0	.16
Feb.	.28	.14	1.30	.11	.59	.08	0	.02	0	0
Mar.	.32	.17	.30	.19	.37	.06	.41	0	0	0
Apr.	.07	.18	.14	.13	T	.23	.04	.43	0	.20
May	.57	.59	2.17	.46	1.38	.50	.28	.31	.71	.43
June	.14	1.44	.41	1.60	.47	1.71	.45	.25	.04	.09
July	2.43	2.94	2.09	3.36	3.52	4.06	2.91	5.12	1.46	1.99
Aug.	3.16	2.90	2.32	2.16	2.76	3.51	1.44	.49	1.00	2.28
Sept.	.19	2.86	.26	2.26	2.60	3.34	.37	0	1.38	1.30
Oct.	.21	.90	2.50	.95	1.61	.99	.47	0	0	0
Nov.	.03	.37	.08	.09	0	.23	.39	0	0	.20
Dec.	.07	.39	.10	.20	T	.26	.63	.14	T	.20
Yearly	7.63	13.18	11.87	11.61	13.50	15.28	7.39	6.76	4.59	6.85

Month	Jiménez, Chihuahua		Parral, Chihuahua		Camargo, Chihuahua		Rosetilla, Chihuahua			
	1957	Average	1957	Average	1956	1957	Average	1957	Average	1956
Jan.	.31	.09	.12	.15	.04			.04	.45	
Feb.	.02	.01	.53	.19	.24			.33	.07	
Mar.	.16	.11	.18	.12	.04			T	.15	
Apr.	0	.13	.39	.20	0			0	.18	
May	1.06	.56	2.13	.38	1.75			.90	.26	
June	.24	.21	.71	1.53	.31			0	1.14	
July	1.81	2.66	3.33	4.19	2.30			.65	2.40	
Aug.	2.15	1.47	2.89	3.98	1.28			.44	2.41	
Sept.	.55	.72	.73	3.82	.12			.47	1.90	
Oct.	.55	.20	.24	1.12	.90	1.83	1.36	.40	.75	
Nov.	T	.12	0	.54	.62	0	.31	.12	.22	
Dec.	T	.19	.06	.44	.48	0	.24	T	.29	
Yearly	6.85	6.47	11.31	16.66	7.91			5.35	10.22	

Month	El Pollito, Chihuahua				Villalba, Chihuahua		Las Virgenes, Chihuahua		La Soledad, Chihuahua	
	1955	1956	1957	Average	1957	Average	1957	Average	1956	
Jan.	.16				.07	.36	.06	.26		.55
Feb.	.20				.11	.08	.22	.04		.04
Mar.	0				.04	.04	.08	.04		0
Apr.	.12				.14	.11	.10	.10		0
May	0	1.50	.75	1.50	.27	1.24	.24			.06
June	.35	T	.18	0	.82	.04	.98			2.15
July	1.73	.54	1.14	3.77	3.65	2.26	2.27			1.81
Aug.	1.42	3.41	2.42	4.87	2.66	2.99	2.07			1.89
Sept.	.24	.55	.43	.41	.43	2.44	.51	1.38		
Oct.	.47	.04	.59	.37	.79	1.08	.58	.57		
Nov.	.10	0	T	.03	.08	.21	.02	.13		
Dec.	0	.04	0	.01	.04	.33	.01	.32		
Yearly		4.61			11.84	12.05	8.11	8.40		

RAINFALL ON THE RIO GRANDE WATERSHED
IN INCHES
In Mexico

Month	La Soledad, Chihuahua		Delicias, Chihuahua		Las Burras Chihuahua			Zubfa, Chihuahua	
	1957	Average	1957	Average	1956	1957	Average	1955	1956
Jan.	.12	.34	.10	.37	.37	.12	.14		T .12
Feb.	.01	.02	.14	.10	.03	.22	.07		.0
Mar.	.24	.12	.06	.11	0	.16	.15		0
Apr.	.47	.24	T	.19	0	.02	.10		0
May			1.52	.25	.26	1.06	.45		1.02
June			.18	1.15	.74	.03	.94		3.03
July	1.22	1.52	.57	2.45	.98	.64	2.67		3.58
Aug.	3.66	2.78	5.00	2.61	1.20	3.81	2.24	1.54	2.01
Sept.	1.02		.91	1.95	1.34	.92	1.35	2.89	0
Oct.	.28		.81	.83	0	1.61	.48		0
Nov.	T		.06	.25	.02	.16	.10		.24
Dec.	0		.04	.36	.04	.10	.13		
Yearly			9.39	10.62	4.98	8.85	8.82		10.00

Month	Zubfa, Chihuahua		Planta Zootécnica, Chihuahua		Chihuahua, Chihuahua		Los Ojos, Chihuahua		Las Choyas, Chihuahua	
	1957	Average	1957	Average	1957	Average	1957	Average	1955	1956
Jan.	0	T			T	.29	1.73			.51
Feb.	0	.06			T	.20	.27			.24
Mar.	0	0	.11		.13	.22	.47			0
Apr.	.04	.02	.08		T	.17	.63			0
May	1.14	.57	1.61		1.66	.39	3.29			0
June	1.14	1.08			.16	1.42	0			1.10
July	1.97	2.50			1.39	3.44	4.72		3.54	.33
Aug.	4.07	3.82	4.63		3.28	3.36	1.26		1.12	.85
Sept.	.31	1.29	.14		.52	2.96	.12		2.20	0
Oct.	.91	1.27	1.22		.62	.87	1.77		2.91	0
Nov.			.12		.25	.45	.12		.12	.04
Dec.			T		.04	.38	.20		0	.35
Yearly					8.05	14.15	14.58			3.42

Month	Las Choyas, Chihuahua		Los Pozos, Chihuahua		El Nogal, Chihuahua					
	1957	Average	1956	1957	Average	1953	1954	1955	1956	
Jan.	T	.26	.65	.14	.40			.02	.28 .22	
Feb.	.57	.40	.04	.37	.20			0 0	.20	
Mar.	0	0	T	.24	.12			0 0	0 0	
Apr.	.06	.03	0	.04	.02			.06 0	0 0	
May	.39	.20		1.71				.12 T	0 0	
June	0	.55		0				.51 1.08	5.35 5.55	
July	1.77	1.88		1.48				5.08 1.08	1.61 1.71	
Aug.	7.68	3.22		2.34				.47 0	0 .96	
Sept.		1.10		0				.16 .05	2.09 0	
Oct.		1.46						0 0	.31 0	
Nov.		.08						.12 0	.59 0	
Dec.		.18		0						
Yearly		9.36						7.70	9.78	4.54

Month	El Nogal, Chihuahua		Maclovio Herrera, Chihuahua		Mayjoma, Chihuahua				Chilicote, Chihuahua	
	1957	Average	1957	Average	1955	1956	1957	Average	1955	1956
Jan.	T	.13	T	.32			.57	.57		.75
Feb.	.14	.08	.31	.12			.20	.94	.57	T
Mar.	0	0	0	.22			0	0		0
Apr.	.04	.02	.26	.23			0	.14	.07	0
May	0	.14	1.02	.62			0	1.59	.80	0
June	0	.13	.14	1.37			.37	.22	.30	T
July	.71	1.92	2.17	2.79			1.48	1.77	1.62	1.14
Aug.	1.93	2.58	.91	2.79	2.81		1.26	3.19	2.42	3.23
Sept.	.43	.40	.12	3.16	1.42		1.67	.43	1.17	.59
Oct.	0	.48	1.73	.72			0	1.08	.40	.24
Nov.	.20	.10	.43	.13	.39		0	.45	.28	.04
Dec.	0	.14	.12	.85	0		.10	.33	.14	0
Yearly		3.45	6.12	7.21	13.32			5.65	10.71	8.34

RAINFALL ON THE RIO GRANDE WATERSHED
IN INCHES
In Mexico

Month	Chilicote, Chihuahua		Ojinaga (IB&WC), Chihuahua		Ojinaga (M.S. of Mexico), Chihuahua		Cd. Acuña, Coahuila		Palestina, Coahuila	
	1957	Average	1957	Average	1957	Average	1957	Average	1957	Average
Jan.			.17	.32	.24	.25	.12	.32	.08	1.03
Feb.			.69	.24	.67	.17	.96	.25	.94	.93
Mar.			.04	.01	.12	.19	3.84	1.19	.77	.74
Apr.			.47	.38	.47	.26	6.22	1.61	5.37	1.60
May			1.16	.38	1.42	.53	5.02	2.06	5.79	2.91
June	T		.02	.47	.16	.76	.45	1.39	1.12	1.89
July	.39	.76	.21	.32	.79	1.08	0	.17	0	1.88
Aug.	1.38	2.23	.37	1.03	.47	1.22	T	1.24	T	2.18
Sept.	.55	.57	T	.37	.12	1.06	3.41	2.41	1.63	2.84
Oct.	2.13	1.18	2.07	.83	2.24	.90	2.52	1.25	2.54	1.26
Nov.	.43	.24	.28	.18	0	.35	1.52	.54	1.36	.74
Dec.			.24	.10	.75	.39	.77	.40	.30	.95
Yearly			5.72	4.63	7.45	7.16	24.83	12.83	19.90	18.95

Month	Jiménez, Coahuila		Piedras Negras, Coahuila		Allende, Coahuila		Villa Hidalgo, Coahuila		Rancho los Vidrios, Tamaulipas	
	1957	Average	1957	Average	1957	Average	1957	Average	1957	Average
Jan.	.14	.45	.16	.43	.12	.48	.17	.34	.11	
Feb.	1.52	.66	2.34	.55	2.15	1.32	1.56	.49	1.36	
Mar.	.84	.93	1.71	.88	T	.43	1.83	.60	.12	
Apr.	6.81	1.68	12.67	2.39	6.08	1.33	2.32	1.54	1.58	
May	13.39	3.50	7.78	3.09	4.61	2.57	8.82	3.54	4.08	
June	1.93	.97	.88	.59	1.00	1.68	.16	.57	.77	
July	0	.58	0	1.62	0	1.30	0	.36	0	
Aug.	.04	2.12	.23	2.40	T	2.17	.55	1.41	.82	
Sept.	3.19	1.83	5.21	2.11	1.08	2.05	4.41	2.34	2.83	1.59
Oct.	2.71	1.43	4.29	1.54	4.69	1.32	1.10	1.39	.94	1.69
Nov.	1.94	.85	1.84	.75	1.12	.44	2.48	.71	3.35	1.68
Dec.	.65	.49	2.25	.59	.65	.49	2.01	.58	.89	.53
Yearly	33.16	15.49	39.36	16.94	21.50	15.58	25.41	13.87	16.85	

Month	Nuevo Laredo (IB&WC), Tamaulipas								Average
	1950	1951	1952	1953	1954	1955	1956	1957	
Jan.	0	.47	.05	T	.11	.35	.04	.09	.14
Feb.	.29	.22	.30	.79	T	.39	.15	1.27	.43
Mar.	.69	.98	.25	.78	.06	0	T	.37	.39
Apr.	.36	1.23	.20	.63	.96	T	.76	1.05	.65
May	4.38	3.09	3.15	1.23	2.26	1.69	2.74	3.73	2.78
June	2.24	3.28	1.93	.08	1.44	1.03	.79	1.00	1.47
July	.44	0	1.39	T	1.07	.33	1.39	0	.58
Aug.	1.00	0	0	1.57	.41	3.00	2.07	.57	1.08
Sept.	.49	5.73	.19	1.54	1.43	2.48	.32	1.63	1.73
Oct.	0	.22	0	1.46	1.18	0	1.51	.88	.66
Nov.	.47	.37	.39	0	.15	2.59	.10	2.46	.82
Dec.	T	.04	.54	.39	.13	0	.12	1.16	.30
Yearly	10.36	15.63	8.39	8.47	9.20	11.86	9.99	14.21	11.03

Month	Nuevo Laredo (M.S. of Mexico), Tamps.		Rancho San Juan de la Palma, Tamps.		Conchos, Coahuila		Múzquiz, Coahuila		Nueva Rosita, Coahuila	
	1957	Average	1957	Average	1957	Average	1957	Average	1957	Average
Jan.	.20	.70	.17	.10	0	.26	0	.87	.09	.69
Feb.	1.54	.73	1.51	.86		.41	2.13	.59	1.83	.50
Mar.	.47	.72	2.41	1.30	.11	.37		.96	.13	.34
Apr.	1.50	1.14	2.19	.94	2.46	1.23	3.11	1.17	1.82	1.21
May	4.13	2.46	.71	.53	8.90	2.59	5.24	3.71	11.88	2.89
June	1.18	1.84	2.70	1.21	.24	.96	.20	2.98	.68	1.83
July	0	1.27	0	.45	0	2.08	0	1.87	T	1.40
Aug.	.57	1.23	.49	1.88	0	1.65	1.61	2.65	.51	1.83
Sept.	1.91	2.57	1.61	2.88	2.97	1.16	7.05	4.71	3.18	2.22
Oct.	1.06	1.28	.35	.22	4.06	1.23		2.17	2.98	1.49
Nov.	3.19	.90	2.63	1.90	1.18	.70		1.22	.96	.47
Dec.	1.02	.96	1.28	.47	.16	.26		1.04	.52	.66
Yearly	16.77	15.80	16.05	12.74		12.90		23.94	24.58	15.53

**RAINFALL ON THE RIO GRANDE WATERSHED
IN INCHES
In Mexico**

Month	Sabinas, Coahuila		Villa Juárez, Coahuila		Cuatro Ciénegas, Coahuila		San Buenaventura, Coahuila		Castaños, Coahuila	
	1957	Average	1957	Average	1957	Average	1957	Average	1957	Average
Jan.	.08	.67	.04	.50	T	.33	.13	.62	T	.49
Feb.	2.00	.89	1.93	.42	1.52	.34	1.41	.47	.83	.43
Mar.	.19	.52	.87	.26	.16	.06	.67	.21	.47	.30
Apr.	1.81	1.29	1.24	1.07	.22	.28	.51	.55	.91	.64
May	4.60	2.89	3.39	2.04	.10	.89	.40	1.37	1.26	1.65
June	.12	2.00	.08	1.03	.08	.64	.47	1.49	.28	1.93
July	0	1.18	T	.61	0	.72	T	1.51	.39	1.33
Aug.	.95	2.45	T	2.00	.08	.90	.08	1.88	.28	2.21
Sept.	2.63	3.26	1.75	2.68	4.27	1.22	4.55	2.06	3.25	2.66
Oct.	2.27	1.64	1.69	1.71	1.56	.76	2.94	1.26	2.83	1.65
Nov.	.96	.46	.71	.51	.16	.30	.74	.51	.30	.31
Dec.	.49	.54	.41	.33	.12	.42	.10	.63	.12	.31
Yearly	16.10	17.79	12.11	13.16	8.27	6.86	12.00	12.56	10.92	13.91

Month	Monclova, Coahuila		Progreso, Coahuila		Don Martín, Coahuila		Laguna de Salinillas, Nuevo León		Anáhuac, Nuevo León	
	1957	Average	1957	Average	1957	Average	1957	Average	1957	Average
Jan.	.16	.44	.10	.47	.10	.75	.12	.62	.12	.68
Feb.	1.34	.47	1.20	.39	1.71	.64	1.42	.66	2.28	.54
Mar.	.35	.29	.18	.23	.18	.55	.24	.56	.33	.62
Apr.	.61	.55	1.28	1.38	2.26	1.22	3.05	1.03	.67	1.05
May	1.98	1.47	4.65	2.49	3.21	2.26	2.28	2.40	2.71	2.64
June	.04	1.12	T	1.32	.20	1.67	3.19	1.26	1.42	1.38
July	.10	1.50	T	.62	.08	.96	T	.51	.18	1.20
Aug.	.05	1.61	T	2.23	.16	1.98	.08	3.00	.57	1.97
Sept.	4.88	2.82	2.07	2.43	2.36	2.79	2.48	2.46	1.30	2.60
Oct.	2.13	1.17	1.83	1.67	1.20	1.53	1.28	1.32	.35	1.29
Nov.	.70	.58	.89	.45	1.10	.58	1.75	.49	1.81	.54
Dec.	.25	.55	.22	.54	.59	.71	1.24	.52	.65	.79
Yearly	12.59	12.57	12.42	14.22	13.15	15.64	17.13	14.83	12.39	15.30

Month	Nueva Cd. Guerrero, Tamaulipas		Cd. Mier, Tamaulipas		Cerralvo, Nuevo León		Laguna de Sánchez, Nuevo León		Villa Allende, Nuevo León	
	1957	Average	1957	Average	1957	Average	1957	Average	1957	Average
Jan.	.04	.58	.12	.06	.01	.63	T	.41	.20	.86
Feb.	1.61	.61	2.20	1.10	.54	.50	.87	.45	1.26	1.01
Mar.	1.81	.64	5.00	2.50	.11	.71	.41	.53	.39	1.20
Apr.	4.88	2.22	5.67	3.62	5.57	1.92	.55	1.20	8.21	2.47
May	1.36	.85	2.28	3.18	2.59	2.99	1.61	2.01	7.52	3.27
June	3.82	1.68	2.01	1.62	1.30	2.43	4.07	3.23	.94	4.34
July	0	.62	0	.16	0	1.32	.61	2.72	.61	2.76
Aug.	1.40	.76	3.98	2.64	0	3.40	3.17	4.62	3.03	4.93
Sept.	.37	1.91	.24	2.20	2.34	4.70	1.10	5.10	1.63	6.50
Oct.	.24	.92	.83	.75	3.69	2.30	1.00	2.89	10.94	5.67
Nov.	No	.15	2.60	1.50	2.20	.63	T	.41	.63	1.22
Dec.	Record	.04	.22	.07	.96	.40	.41	.48	1.00	1.06
Yearly		10.98	25.15	19.40	19.31	21.93	13.80	24.05	36.36	35.29

Month	Villa de Santiago, Nuevo León		Rinconada, Nuevo León		Santa Catarina, Nuevo León		Monterrey, Nuevo León		Cadereyta, Nuevo León	
	1957	Average	1957	Average	1957	Average	1957	Average	1957	Average
Jan.	.22	.83	0	.18	.04	.85	.19	.65	.35	.78
Feb.	3.28	1.03	.28	.35	.94	.40	.99	.63	1.56	.94
Mar.	.20	1.04	.12	.22	.08	.31	.04	.75	.55	1.25
Apr.	2.18	1.71	.79	.60	.76	.65	1.46	1.16	9.97	2.23
May	5.80	2.75	.31	.45	.78	.67	.71	1.54	3.54	3.34
June	2.77	4.77	1.65	.93	.54	1.92	2.33	2.75	1.63	2.23
July	.09	3.14	0	.39	0	1.23	.22	2.47	T	2.36
Aug.	4.75	5.31	0	1.33	.75	2.88	3.81	3.10	1.27	3.59
Sept.	3.56	8.19	1.02	1.58	3.39	2.98	1.79	5.53	.80	4.43
Oct.	11.21	5.26	.47	.84	.51	1.69	2.72	3.15	6.96	3.19
Nov.	.84	1.36	.47	.23	.24	.44	.44	1.28	.19	1.15
Dec.	1.02	.98	.75	.30	.19	.63	.31	.79	1.06	.74
Yearly	35.92	36.37	5.86	7.40	8.22	14.65	15.01	23.80	27.88	26.23

RAINFALL ON THE RIO GRANDE WATERSHED
IN INCHES
In Mexico

Month	San Juan, Nuevo León		Rayones, Nuevo León		Montemorelos, Nuevo León		El Cuchillo, Nuevo León	
	1957	Average	1956	1957	Average	1957	Average	1957
Jan.	.31	.60	0	0	.35	.26	.80	.02
Feb.	1.34	.97	0	0	.38	.87	.92	2.56
Mar.	2.05	1.01	T	0	.35	.57	1.08	2.39
Apr.	8.74	2.52	1.91	6.26	1.01	9.13	2.32	.51
May	1.34	1.62	3.80	2.33	1.51	3.62	2.87	6.29
June	.35	2.28	1.31	1.42	2.10	1.63	3.37	1.71
July	0	1.05	1.66	0	1.01	0	2.05	.45
Aug.	.87	4.17	1.69	1.42	3.10	1.24	3.96	.05
Sept.	.79	4.33	1.50	.98	2.78	.89	5.13	3.16
Oct.	2.88	2.90	0	1.68	1.64	5.63	3.52	2.10
Nov.	.53	.62	1.18	0	.38	.45	1.60	.68
Dec.	.10	.55	0	T	.24	.93	.94	.39
Yearly	19.30	22.62	13.05	14.09	14.85	27.22	28.56	21.94
								18.58

Month	Los Ramones, Nuevo León		Los Herrera, Nuevo León		Las Enramadas, Nuevo León		Gral. Bravo, Nuevo León	
	1957	Average	1956	1957	Average	1957	Average	1957
Jan.	T	.55	0	0	.56	T	.91	.73
Feb.	1.22	.63	.06	3.44	.63	1.18	.63	.40
Mar.	1.50	.70	0	1.08	.74	1.79	.69	.60
Apr.	3.64	1.92	.41	3.13	1.52	7.11	1.74	1.62
May	1.10	2.02	.41	6.82	2.92	1.38	2.75	2.60
June	1.06	2.97	0	1.23	2.60	2.22	3.48	1.89
July	T	1.80	.70	0	1.20	0	2.18	.23
Aug.	.47	3.37	.14	.16	2.57	1.67	3.25	.16
Sept.	1.42	4.23	2.74	.77	3.94	1.79	5.01	.36
Oct.	3.19	2.27	T	.80	2.02	1.44	2.36	1.88
Nov.	.83	.45	1.00	.82	.51	.79	.63	.87
Dec.	.91	.28	0	0	.39	.59	.68	.03
Yearly	15.34	21.19	5.46	18.25	19.60	19.96	24.31	20.48

Month	Topo Chico, Nuevo León		Gral. Cepeda, Coahuila		Reata, Coahuila		Saltillo, Coahuila		Ramos Arizpe, Coahuila	
	1957	Average	1957	Average	1957	Average	1957	Average	1957	Average
Jan.	0	.49	0	.46	0	.34	.06	.57	.03	.41
Feb.	.11	.72	.98	.40	0	.26	1.33	.49	.71	.33
Mar.	.02	.63	0	.26	.35	.22	.48	.37	.34	.31
Apr.	1.06	1.04	0	.35	.59	.49	.32	.72	.58	.49
May	.87	1.04	1.44	.82	.39	.56	1.11	.99	1.04	.74
June	.87	1.87	0	2.11	.94	1.28	.31	2.06	.20	1.06
July	0	1.40	1.54	3.56	0	.75	.45	2.66	.26	1.41
Aug.	.67	3.07	.84	2.88	0	2.11	.90	2.34	.18	1.32
Sept.	.83	4.10	1.19	2.78	1.06	1.18	1.18	2.43	.95	1.66
Oct.	2.99	2.18	.43	1.23	0	.18	1.22	.49	.41	.45
Nov.	.41	.74	.39	.48	0	.45	.51	.90	.08	.52
Dec.	0	.57	0	.53	0	.12	.16	.63		
Yearly	7.83	17.85	6.81	15.86	3.33	7.94		15.38	5.27	9.35

Month	Ciénega de Flores, Nuevo León		Higueras, Nuevo León		Comales, Tamaulipas		Camargo, Tamaulipas		San Miguel de Camargo, Tamps.	
	1957	Average	1957	Average	1957	Average	1957	Average	1957	Average
Jan.	.81	1.13	.09	.73	.09	.65	.02	.25		.28
Feb.	.84	.60	.34	.53	1.63	.61	1.71	.64	4.18	.89
Mar.	.20	.78	.01	.55	.78	.70	.47	.60	.37	.58
Apr.	5.78	1.26	3.17	1.19	5.20	1.70	5.94	2.80	5.17	2.85
May	3.02	2.13	1.37	1.69	4.14	1.98	1.50	1.32	1.44	1.10
June	3.45	2.42	1.00	2.40	2.42	1.91	5.35	2.11		1.36
July	T	1.88	.63	2.09	0	.96	0	.44	0	.67
Aug.	1.02	4.15	1.52	2.96	0	2.48	.45	1.46	0	1.55
Sept.	3.69	4.39	2.22	4.35	.98	2.96	1.44	2.15		.38
Oct.	4.05	2.06	2.08	1.67	.32	1.95	.49	2.56	1.74	3.98
Nov.	1.14	.71	.85	.77	1.59	.51	1.90	1.10	1.70	.89
Dec.	1.77	.73	.28	.66	.46	.63	.39	.25	.03	.20
Yearly	25.77	22.24	13.56	19.59	17.61	17.04	19.66	15.68		14.73

RAINFALL ON THE RIO GRANDE WATERSHED
IN INCHES
In Mexico

Month	Reynosa, Tamaulipas		Río Bravo, Tamaulipas		Retamal, Tamaulipas		Control (Cl-K-9), Tamaulipas		Iturbide, Nuevo León	
	1957	Average	1957	Average	1957	Average	1957	Average	1957	Average
Jan.	.31	.96	.10	.31	.20	.38	.30	.93	.16	.30
Feb.	1.93	.60	3.94	.89	2.44	.70	1.65	.69	.90	.55
Mar.	2.74	.71	2.03	.78	2.52	.83	1.81	.78	.45	.50
Apr.	3.96	1.24	3.39	2.01	4.49	1.78	2.46	1.35	1.39	1.13
May	2.86	2.39	1.77	1.36	2.15	1.75	1.57	2.42	3.78	2.01
June	.41	1.77	2.52	2.59	1.38	2.41	7.01	2.58	3.43	2.96
July	0	1.24	0	1.58	T	.88		1.19	.12	2.57
Aug.	T	1.55	.16	2.36	.98	2.33		2.84	2.72	4.20
Sept.	.30	2.29	.98	3.35	.83	2.69	1.12	4.57	3.65	5.15
Oct.	T	2.21	.08	1.31	T	2.14	.08	1.87	1.93	2.64
Nov.	2.54	.82	2.40	.90	2.68	.94	2.89	1.20	.24	.42
Dec.	.72	.64	1.22	.42	1.22	.44	2.04	.61	.24	.34
Yearly	15.77	16.42	18.59	17.86	18.89	17.27		21.03	19.01	22.77

Month	Linares, Nuevo León		Las Comitas, Nuevo León		Valle Hermoso, Tamaulipas		Villagrán, Tamaulipas		Méndez, Tamaulipas	
	1957	Average	1957	Average	1957	Average	1957	Average	1957	Average
Jan.	.26	.97	0	.27	.14	.35	.37	.39	T	.81
Feb.	1.59	.86	1.08	.31	4.00	.97	3.01	.89	3.14	.73
Mar.	1.27	1.16	.25	.33	.73	.49	.31	.92	3.05	1.04
Apr.	8.13	2.48	1.10	.90	2.09	1.45	3.58	2.88	6.72	1.65
May	6.58	3.54	.57	1.05	1.46	2.45	4.86	4.97	1.10	2.74
June	.59	3.47	3.72	2.48	1.95	3.00	1.61	3.58	5.89	2.51
July	T	2.81	.02	1.59	T	1.37	.02	2.52	.33	1.03
Aug.	1.89	3.37	3.24	3.58	.63	1.60	4.11	6.33	.43	3.55
Sept.	3.82	6.29	1.91	4.26	1.95	4.48	4.84	6.55	2.83	3.93
Oct.	8.63	3.27	.51	2.05	.12	2.53	1.67	3.23	1.34	1.95
Nov.	.77	1.23	.07	.42	7.95	1.23	.45	.85	1.17	.46
Dec.	.59	.94	.41	.44	1.91	.32	.65	.31	T	.39
Yearly	34.12	30.39	12.88	17.68	22.93	20.24	25.48	33.42	26.00	20.79

**AVERAGE RAINFALL ON SUBDIVISIONS OF THE RIO GRANDE WATERSHED
IN INCHES**

With Averages for the 87 Years 1871-1957, Inclusive

The precipitation records of all stations on or adjacent to the watershed subdivisions listed below have been used, with proper weighting for area, in calculating the average rainfalls shown here. The drainage area for each subdivision is shown in parentheses. The hundreds of individual records are delineated in the various "Indexes to Precipitation Records" shown in Water Bulletins Nos. 10, 14, 22, and 26.

Month	El Paso to Fort Quitman (2,768 Square Miles)		Fort Quitman to Upper Presidio (2,953 Square Miles)		* Upper Presidio to Johnson Ranch (3,886 Square Miles)		Johnson Ranch to Langtry (14,080 Square Miles)	
	1957	Period Average	1957	Period Average	1957	Period Average	1957	Period Average
	Jan.	.14	.45	.20	.39	.20	.35	.29
Feb.	.99	.37	.98	.25	1.29	.28	2.72	.34
Mar.	.18	.33	.08	.26	.18	.19	.27	.43
Apr.	.09	.29	.24	.38	.26	.42	.83	.81
May	.72	.42	.82	.61	1.20	.78	2.51	1.52
June	.01	.80	.14	1.19	.12	1.06	.64	1.76
July	1.49	2.39	1.13	3.19	.53	1.82	1.12	1.91
Aug.	2.77	1.98	1.27	2.45	.28	1.83	.30	2.21
Sept.	.44	1.36	.20	1.91	.29	1.40	.84	2.17
Oct.	1.98	.92	2.72	1.02	1.65	.83	1.90	1.18
Nov.	.45	.44	.23	.39	.16	.34	.58	.61
Dec.	.03	.61	.15	.56	.07	.42	.12	.57
Total	9.29	10.36	8.16	12.60	6.23	9.72	12.12	14.01

Month	Pecos River Below Sheffield (3,519 Square Miles)		* Langtry to Diablo Dam Site (2,014 Square Miles)		Devils River		‡ Diablo Dam Site to Eagle Pass (1,695 Square Miles)	
	1957	Period Average	1957	Period Average	1957	Period Average	1957	Period Average
	Jan.	.40	.72	.25	.52	.30	.67	.21
Feb.	4.10	.89	1.56	.62	2.09	.64	1.61	.88
Mar.	.60	.81	1.18	.84	1.37	1.14	1.81	1.08
Apr.	3.08	2.00	4.32	1.37	4.23	1.82	7.22	1.68
May	6.19	1.80	6.73	2.02	8.02	2.62	7.91	2.99
June	1.82	2.53	.64	2.24	.98	2.71	.94	2.42
July	.34	1.88	.02	1.18	.25	1.75	.01	1.88
Aug.	.07	2.03	.02	1.64	.30	2.09	.31	1.93
Sept.	1.03	2.35	1.50	2.24	1.64	2.89	3.40	3.03
Oct.	2.74	1.80	1.89	1.33	3.81	2.13	3.19	1.90
Nov.	1.69	.96	1.40	.81	2.59	1.65	1.68	1.07
Dec.	.30	.79	.58	.67	.69	1.06	1.23	.92
Total	22.36	18.56	20.09	15.48	26.27	21.17	29.52	20.53

Month	⊕ Eagle Pass to Laredo (4,117 Square Miles)		⊖ Laredo to Falcón Dam (3,394 Square Miles)		† Falcón Dam to Rio Grande City (1,166 Square Miles)		United States Side Below Rio Grande City (443 Square Miles)	
	1957	Period Average	1957	Period Average	1957	Period Average	1957	Period Average
	Jan.	.15	.74	.12	.72	.07	.86	.16
Feb.	2.11	.79	1.30	.74	2.38	.78	2.82	1.02
Mar.	1.00	1.01	1.50	.87	2.25	1.05	2.62	1.14
Apr.	6.12	1.60	2.02	1.43	4.12	1.20	2.97	1.35
May	5.06	3.22	1.26	3.33	1.61	2.42	2.12	2.84
June	.85	2.45	2.49	1.81	3.37	2.01	4.82	2.45
July	T	1.40	.01	2.24	T	2.01	.08	1.78
Aug.	.26	2.34	.79	1.81	.94	2.09	.54	2.28
Sept.	3.40	2.94	2.07	2.84	1.63	3.16	1.42	4.27
Oct.	3.04	1.74	.69	1.49	1.33	1.88	.42	2.41
Nov.	2.24	.98	2.18	1.65	2.33	.73	3.20	1.40
Dec.	2.19	1.04	1.09	.82	.55	.65	.91	1.26
Total	26.42	20.25	15.52	19.75	20.58	18.84	22.08	23.38

* Excluding Río Conchos, Alamito and Terlingua Creeks. # Excluding Pecos and Devils Rivers. † Excluding Arroyo las Vacas, San Felipe Creek, Pinto Creek, Río San Diego, and Río San Rodrigo. ⊕ Excluding Río Escondido.

⊖ Excluding Río Salado above Old Cd. Guerrero. † Excluding Río Alamo and Río San Juan.

LOCATION OF RAINFALL STATIONS ON THE RIO GRANDE WATERSHED

The precipitation records of stations listed below began on the dates shown and extend through 1957. For detailed information regarding the particular months or years missing from the periods of record indicated, see "Index to Precipitation Records" in Water Bulletins Nos. 10, 14, 22, and 26. These indexes also include the sources of data and the years and months included in the periods of record through 1952 for all stations on or adjacent to the watershed of the Rio Grande in the United States and Mexico.

In the United States

NAME OF STATION	TYPE GAGE	LATI- TUDE	LONGI- TUDE	ELEV. (FT.)	RECORD BEGAN	WATERSHED SUBDIVISION	OBSERVER
Adams Bros. Ranch	S	30° 10'	101° 58'	2,150	Apr. 1952	Johnson Ranch - Langtry	George Adams
Adobes Ranch	S	29° 46'	104° 34'	2,550	1950	Fort Quitman -	
American Dam	S	31° 47'	106° 32'	3,730	1938	Upper Presidio	T. C. Davis
Apache Ranch	C	27° 56'	99° 56'	500	# 1953	El Paso - Fort Quitman	I.B. & W.C.
Armistead Ranch	S	29° 35'	100° 39'	1,510	Dec. 1951	Eagle Pass - Laredo	L. Guardiola
Arroyo Tigre Chiquito	C	26° 41'	99° 07'	314	Apr. 1954	Diablo Dam Site -	Floyd Hodges
Arthur, C. L. Ranch	S	30° 23'	103° 45'	4,900	# 1946	Eagle Pass	I.B. & W.C.
Arvin & Harkins - Bean	V	30° 26'	102° 23'	3,100	Nov. 1948	Laredo - Falcón Dam	G. L. Arthur
Arvin & Harkins - Camel	V	30° 25'	102° 20'	2,890	Nov. 1948	Pecos River above	Sid Harkins
Arvin & Harkins - Header	V	30° 27'	102° 26'	3,400	Nov. 1948	Sheffield	Sid Harkins
Arvin & Harkins - Hqrs.	S	30° 27'	102° 19'	2,930	Nov. 1948	Johnson Ranch - Langtry	Sid Harkins
Arvin & Harkins - Monty Corder	V	30° 27'	102° 14'	2,850	Nov. 1948	Johnson Ranch - Langtry	Sid Harkins
Baugh, A. L. Ranch	S	29° 52'	104° 02'	3,820	#July 1942	Alamito Creek	A. L. Baugh
Bennett, Moody Ranch	S	30° 37'	104° 52'	3,240	July 1956	Fort Quitman -	Moody Bennett
Black Gap Game Refuge	S	29° 35'	103° 21'	2,250	1952	Upper Presidio	Tom Moore
Bloys Camp	V	30° 33'	104° 07'	5,650	# 1941	Johnson Ranch - Langtry	J. H. McMichael
Bricker Ranch	S	29° 59'	101° 52'	1,680	May 1952	Alamito Creek	Lena Mae Bricker
Buttrill Ranch	S	30° 00'	103° 16'	3,500	Mar. 1952	Johnson Ranch - Langtry	Tom B. Leary
CCWCID #3 (La Feria Dist. Off.) Avg. 6 gages	S	26° 09'	97° 49'	50	1952	Lower Rio Grande Valley	CCWCID #3
CCWCID #11 (Bayview Dist. Off.) Avg. 18 gages	S	26° 08'	97° 21'	25	1952	Lower Rio Grande Valley	CCWCID #11
CCWCID #19 (Adams Gardens)	S	26° 10'	97° 47'	50	1952	Lower Rio Grande Valley	CCWCID #19
Cedar Service Station	S	29° 55'	101° 55'	1,860	1955	Johnson Ranch - Langtry	Harve Eastman
Chaffin, N. B. Ranch	S	29° 54'	104° 02'	3,800	# 1947	Alamito Creek	N. B. Chaffin
Comstock	S	29° 41'	101° 11'	1,530	May 1939	Langtry - below	
Corralitos Ranch	C	27° 07'	99° 27'	346	1953	Diablo Dam Site	George Humphries
County Line	R	31° 23'	105° 59'	3,550	1938	Laredo - Falcón Dam	I.B. & W.C.
Cuervo Creek	C	28° 21'	100° 19'	620	1954	El Paso - Fort Quitman	I.B. & W.C.
Dale, O.C. Farm	S	26° 15'	98° 16'	130	1952	Eagle Pass - Laredo	I.B. & W.C.
Devils Lake	S	29° 34'	100° 59'	1,080	May 1939	Lower Rio Grande Valley	O. C. Dale
Diablo Dam Site	C	29° 25'	101° 02'	980	Oct. 1954	Devels River	C.P. & L. Co.
Dove Mountain Ranch	S	29° 49'	102° 53'	2,770	#Mar. 1952	Diablo Dam Site -	I.B. & W.C.
Dryden	S	30° 03'	102° 07'	2,130	# 1931	Eagle Pass - Laredo	Sam Cavness
Edinburg Filtration Plant	S	26° 18'	98° 10'	100	1952	El Paso - Fort Quitman	Lewis Cash
El Indio	S	28° 31'	100° 19'	725	# 1941	Eagle Pass - Laredo	City of Edinburg
Fabens-Guadalupe Bridge	S	31° 26'	106° 08'	3,610	Apr. 1940	El Paso - Fort Quitman	Glen Stidham
Falcon Dam	S	26° 34'	99° 08'	323	Apr. 1950	Laredo - Falcón Dam	I.B. & W.C.
Fletcher, H. T. Ranch	S	30° 12'	104° 16'	5,100	# 1939	Alamito Creek	Hayes Mitchell, Jr.
Fort Hancock Bridge	S	31° 16'	105° 51'	3,500	Apr. 1940	El Paso - Fort Quitman	I.B. & W.C.
Fort McIntosh (Laredo)	S	27° 30'	99° 31'	410	# 1950	Eagle Pass - Laredo	I.B. & W.C.
Fort Quitman	R	31° 06'	105° 36'	3,430	# 1937	El Paso - Fort Quitman	I.B. & W.C.
Garner Ranch	S	29° 56'	102° 39'	2,600	1949	Johnson Ranch - Langtry	J. Garner
Garciaville	R	26° 20'	98° 41'	200	Apr. 1957	Lower Rio Grande Valley	I.B. & W.C.
Greenwood, H. M. - (Cienega Ranch)	S	29° 48'	104° 13'	4,000	Mar. 1941	Alamito Creek	H. M. Greenwood
Guayuco Arroyo	R	31° 10'	105° 40'	3,600	#May 1940	El Paso - Fort Quitman	I.B. & W.C.
Hardgrave, E. W. Ranch	S	30° 18'	102° 09'	2,650	Apr. 1952	Johnson Ranch - Langtry	Jack Hardgrave
HCWCID #6 (Goodwin Pump #4) Avg. 3 gages	S	26° 18'	98° 22'	185	1953	Lower Rio Grande Valley	HCWCID #6
HCWCID #15 (Edinburg Office)	S	26° 23'	98° 09'	85	1952	Lower Rio Grande Valley	HCWCID #15
HCWCID #6 (Elsa Office)	S	26° 19'	98° 01'	70	1952	Lower Rio Grande Valley	HCWCID #6
Hinds, Lucius Ranch	S	29° 46'	101° 03'	1,690	Sept. 1954	Devil's River	Lucius Hinds
Hoffman Ranch	S	30° 38'	103° 51'	4,650	June 1955	Pecos River above	
Huisache Ranch	C	26° 57'	99° 21'	383	Aug. 1953	Sheffield	Dr. A. J. Hoffman
Ingram Ranch	S	29° 52'	101° 29'	1,580	#Sept. 1954	Laredo - Falcón Dam	I.B. & W.C.
Island Station	R	31° 32'	106° 14'	3,630	1939	Pecos River below	Arnum Humphries
Johnson Ranch	C	29° 01'	103° 23'	2,050	#July 1933	Sheffield	I.B. & W.C.

* Some months or years missing C Cumulative R Recording S Standard V Visual

LOCATION OF RAINFALL STATIONS ON THE RIO GRANDE WATERSHED

In the United States

NAME OF STATION	TYPE GAGE	LATI- TITUDE	LONGI- TITUDE	ELEV. (FT.)	RECORD BEGAN	WATERSHED SUBDIVISION	OBSERVER
Justapor Ranch	C	27° 53'	99° 27'	720	# Oct. 1952	Adjacent to Eagle Pass - to Laredo	Mrs. O. C. Ray
Kelly Ranch	V	30° 32'	104° 16'	5,320	# 1941	Adj. to Alamito Creek	George Jones
King, Martin Ranch	C	29° 44'	101° 23'	1,460	Nov. 1954	Langtry to below Diablo Dam Site	I. B. & W. C.
Kokernot Ranch - Hqtrs.	S	29° 58'	103° 34'	4,120	1952	Johnson Ranch - Langtry	David Kokernot
Kokernot Ranch - No. 2	V	29° 59'	103° 35'	4,170	1949	Johnson Ranch - Langtry	David Kokernot
La Feria Pumping Plant	S	26° 03'	97° 50'	60	1952	Lower Rio Grande Valley	CCWCID #3
La Joya	R	26° 15'	98° 29'	150	Apr. 1957	Lower Rio Grande Valley	I. B. & W. C.
Laredo Water Plant	S	27° 33'	99° 31'	410	# 1930	Eagle Pass - Laredo	Laredo Water Plant
Livingston Ranch	S	29° 49'	104° 22'	4,150	# 1951	Upper Presidio to Johnson Ranch	J. S. Livingston
Loma Vista Ranch	S	30° 13'	103° 47'	5,450	# 1941	Alamito Creek	Hays Mitchell
Los Ebanos	C	26° 16'	98° 33'	150	Apr. 1957	Lower Rio Grande Valley	I. B. & W. C.
Los Fresnos Pumping Plant	S	25° 57'	97° 34'	30	1952	Lower Rio Grande Valley	CCWCID #6
Madden Arroyo	R	31° 13'	105° 46'	3,500	Sept. 1941	El Paso - Fort Quitman	I. B. & W. C.
Maravillas Gap Ranch	S	30° 01'	103° 20'	3,520	1956	Johnson Ranch - Langtry	Guy Combs, Jr.
Marfa Experiment Station	S	30° 20'	103° 59'	4,800	1950	Alamito Creek	Marfa Exp. Station
Maverick County Canal Headgate	S	29° 10'	100° 46'	870	Mar. 1948	Diablo Dam Site to Eagle Pass	MCWCID #1
Maverick Power Plant	S	28° 50'	100° 33'	800	June 1952	Diablo Dam Site to Eagle Pass	C.P. & L. Co.
Maverick Ranger Station	S	29° 19'	103° 27'	2,780	Feb. 1955	Upper Presidio to Johnson Ranch	Park Ranger
McCracken Ranch	S	29° 51'	104° 14'	4,250	# 1941	Alamito Creek	J. M. Humphries
McFarland Ranch - Cane Pasture	V	30° 03'	104° 15'	5,370	1955	Alamito Creek	C. E. McFarland
McFarland Ranch - Casa Colorada	V	30° 06'	104° 17'	5,330	1955	Alamito Creek	C. E. McFarland
McFarland Rch. - Cement	V	30° 05'	104° 19'	5,470	1955	Alamito Creek	C. E. McFarland
McFarland Rch. - Cocameca	V	30° 08'	104° 16'	5,300	Dec. 1956	Alamito Creek	C. E. McFarland
McFarland Rch. - Deep Well	V	30° 07'	104° 17'	5,470	1955	Alamito Creek	C. E. McFarland
McFarland Rch. - Hqtrs.	S	30° 06'	104° 16'	5,310	# 1941	Alamito Creek	C. E. McFarland
Punta el Agua	V	30° 02'	104° 13'	5,210	1955	Alamito Creek	C. E. McFarland
McFarland Rch. - Shannon	V	30° 06'	104° 20'	5,480	1955	Alamito Creek	C. E. McFarland
McGonagill Rch. - E. Mill	V	30° 20'	102° 55'	4,050	May 1952	Johnson Ranch - Langtry	W. E. McGonagill
McGonagill Rch. - Hqtrs.	S	30° 20'	102° 58'	4,150	Apr. 1952	Johnson Ranch - Langtry	W. E. McGonagill
Mission Pump	S	26° 10'	98° 20'	100	1952	Lower Rio Grande Valley	HCWCID #14
Mitchell, Kerr Ranch	S	30° 13'	104° 00'	4,450	# 1941	Alamito Creek	Mrs. Kerr Mitchell
Murse Farm	S	26° 19'	97° 55'	65	1952	Lower Rio Grande Valley	Mr. Murse
Neely Ranch	S	30° 59'	105° 32'	3,350	Aug. 1941	Fort Quitman to Upper Presidio	Mrs. Tom Neely
02 Ranch	S	29° 51'	103° 45'	3,780	# 1914	Terlingua Creek	Cavin Woodward
Peñitas (Edinburg Pump. Plt.)	S	26° 14'	98° 27'	100	July 1957	Lower Rio Grande Valley	B. Leadbetter
Persimmon Gap Ranger Sta.	S	29° 40'	103° 10'	2,900	# 1948	Johnson Ranch - Langtry	Park Ranger
Petan Ranch	S	30° 04'	104° 29'	5,400	1950	Adj. to Fort Quitman	Jim Harrington
Potter, A. M. Ranch	S	29° 46'	103° 25'	3,440	# 1952	Johnson Ranch - Langtry	A. M. Potter
Presidio (I. B. & W. C. Gage)	C	29° 34'	104° 23'	2,550	Oct. 1949	Upper Presidio to Johnson Ranch	I. B. & W. C.
Pumpville	S	29° 57'	101° 44'	1,800	# Oct. 1946	Johnson Ranch - Langtry	Pellum Bradford
Quebec Ranch	V	30° 31'	104° 24'	4,600	1949	Adj. to Upper Presidio to Johnson Ranch	George Jones
Quemado	S	28° 56'	100° 37'	765	# Nov. 1941	Diablo Dam Site to Eagle Pass	Lon McGee
Redford	C	29° 29'	104° 13'	2,500	July 1954	Upper Presidio to Johnson Ranch	I. B. & W. C.
Roma (Internat'l. Bridge)	S	26° 24'	99° 01'	230	1941	Falcón Dam to Rio Grande City	Starr Co. Bridge Co.
San Benito Pump	S	26° 03'	97° 45'	50	Oct. 1933	Lower Rio Grande Valley	I. B. & W. C.
San Jacinto Ranch	S	29° 44'	103° 59'	3,560	1953	Alamito Creek	N. B. Chaffin
Sand Valley Ranch	S	29° 33'	103° 16'	3,250	# 1952	Johnson Ranch - Langtry	Fred Gulilur
Santa Ysabel Farm	S	27° 39'	99° 37'	440	Nov. 1952	Eagle Pass - Laredo	Virgil Roberts
Santiago Peak Ranch	S	29° 55'	103° 23'	3,730	1953	Johnson Ranch - Langtry	Ellis Owens
Sauz Ranch	S	30° 10'	104° 12'	4,880	# 1940	Alamito Creek	Hayes Mitchell, Jr.
Shannon, Bill Ranch	C	29° 58'	104° 41'	2,750	July 1956	Fort Quitman to Upper Presidio	Bill Shannon
Shumla Bend	C	29° 50'	101° 25'	1,350	Nov. 1954	Pecos River below Sheffield	I. B. & W. C.
Stumberg, Steve Ranch	C	30° 11'	102° 53'	4,300	# 1943	Johnson Ranch - Langtry	I. B. & W. C.
Terlingua Creek Station	C	29° 12'	103° 36'	2,260	Mar. 1952	Terlingua Creek	I. B. & W. C.
Tenus	S	30° 08'	102° 54'	3,725	1957	Johnson Ranch - Langtry	Mattie V. Chambers
Tortuga Ranch	S	28° 39'	100° 26'	780	# May 1950	Eagle Pass - Laredo	W. H. Brown
Upper Devils	C	29° 45'	101° 01'	1,260	Sept. 1954	Devils River	I. B. & W. C.
Van Eman, L. T. Ranch	S	29° 52'	103° 59'	3,890	# 1947	Alamito Creek	L. T. Van Eman
Wardlaw Ranch	C	29° 28'	100° 58'	1,110	Aug. 1955	Devils River	I. B. & W. C.
Whipple Farm	S	26° 04'	97° 29'	25	1952	Lower Rio Grande Valley	Harry Whipple
Willoughby, Ray Ranch	S	30° 12'	103° 33'	5,050	1952	Johnson Ranch - Langtry	Cliff St. Clair
Woodward, J. F. Ranch	S	30° 08'	103° 36'	4,750	1954	Johnson Ranch - Langtry	J. F. Woodward
Wuensche Farm	S	28° 24'	100° 19'	640	# 1952	Eagle Pass - Laredo	I. B. & W. C.
Zapata Water Plant	S	26° 54'	99° 16'	380	May 1953	Laredo - Falcón Dam	Juventino Martínez

Some months or years missing C Cumulative R Recording S Standard V Visual

LOCATION OF RAINFALL STATIONS ON THE RIO GRANDE WATERSHED

In Mexico

NAME OF STATION	TYPE GAGE	LATI- TUDE	LONGI- TUDE	ELEV. (FT.)	RECORD BEGAN	WATERSHED SUBDIVISION	OBSERVER
Allende, Coahuila	S	28° 21'	100° 51'	1,170	# 1947	Río Escondido	Hydr. Resources
Anáhuac, Nuevo León	S	27° 15'	100° 07'	650	June 1933	Río Salado	Hydr. Resources
Bachiniva, Chihuahua	†	28° 48'	107° 15'	6,250	1952	Adjacent to Río Conchos	Meteor. Service of Chihuahua
Balleza, Chihuahua	S	26° 57'	106° 21'	5,870	# 1903	Río Conchos	Meteor. Service of Mexico
Cadereyta, Nuevo León	S	25° 36'	99° 59'	1,180	# Sept. 1904	Río San Juan	Hydr. Resources
Camargo, Chihuahua	†	27° 42'	105° 10'	3,950	Oct. 1956	Río Conchos	Meteor. Service of Chihuahua
Camargo, Tamaulipas	S	26° 20'	98° 49'	175	# 1953	Río San Juan	Hydr. Resources
Castaños, Coahuila	S	26° 47'	101° 27'	2,440	# Oct. 1932	Río Salado	Hydr. Resources
Cd. Acuña, Coahuila	S	29° 19'	100° 56'	919	1951	Langtry to Del Rio	I. B. & W. C.
Cd. Guerrero, Chihuahua	S	28° 33'	107° 30'	6,560	# May 1903	Adjacent to Río Conchos	Meteor. Service of Mexico
Cd. Mier, Tamaulipas	S	26° 26'	99° 09'	260	Oct. 1955	Laredo to Falcón Dam	I. B. & W. C.
Cerralvo, Nuevo León	R	26° 06'	99° 37'	1,120	# Nov. 1938	Río San Juan	Hydr. Resources
Chihuahua, Chihuahua	S	28° 38'	106° 04'	4,690	# 1900	Río Conchos	Meteor. Service of Mexico
Chilicote, Chihuahua	†	28° 59'	104° 48'	†	# 1955	Río Conchos	Meteor. Service of Chihuahua
Ciénega de Flores, Nuevo León	R	25° 58'	100° 10'	1,760	Apr. 1938	Río San Juan	Hydr. Resources
Comales, Tamaulipas	R	26° 11'	98° 55'	270	# Mar. 1938	Río San Juan	Hydr. Resources
Conchos, Coahuila	†	28° 00'	101° 19'	†	# Oct. 1950	Río Salado	†
Control (C1-K-9), Tamaulipas	S	25° 58'	97° 49'	59	# June 1942	Lower Río Grande Valley	Hydr. Resources
Cuarto Ciénegas, Coahuila	S	27° 00'	102° 05'	2,430	# June 1923	Río Salado	Hydr. Resources
Cuauhtémoc, Chihuahua	S	28° 24'	106° 52'	7,250	# June 1923	Adjacent to Río Conchos	Hydr. Resources
Delicias, Chihuahua	S	28° 11'	105° 31'	3,710	# Aug. 1933	Río Conchos	Hydr. Resources
Don Martín, Coahuila	S	27° 33'	100° 37'	790	# June 1927	Río Salado	Hydr. Resources
El Cuchillo, Nuevo León	S	25° 43'	99° 16'	590	June 1938	Río San Juan	Hydr. Resources
El Magüey, Chihuahua	†	27° 35'	106° 07'	†	July 1955	Río Conchos	Meteor. Service of Chihuahua
El Nogal, Chihuahua	†	28° 52'	105° 51'	†	Sept. 1953	Río Conchos	Meteor. Service of Chihuahua
El Pollito, Chihuahua	†	28° 18'	105° 23'	3,820	# 1955	Río Conchos	Meteor. Service of Chihuahua
El Sitio, Chihuahua	†	27° 31'	106° 14'	†	July 1955	Río Conchos	Meteor. Service of Chihuahua
El Vergel, Chihuahua	†	26° 59'	106° 23'	†	1957	Río Conchos	Meteor. Service of Chihuahua
Félix U. Gómez (Los Lamentos), Chihuahua	†	30° 35'	105° 50'	4,920	1955	Adjacent to Ft. Quitman	Hydr. Resources
Gral. Bravo, Nuevo León	S	25° 48'	99° 09'	390	# Sept. 1906	to Upper Presidio Río San Juan	Meteor. Service of Chihuahua
Gral. Cepeda, Coahuila	S	25° 24'	101° 29'	4,920	Aug. 1926	Río San Juan	Hydr. Resources
Higueras, Nuevo León	S	25° 59'	100° 01'	1,670	# Sept. 1906	Río San Juan	Meteor. Service of Mexico
Iturbide, Nuevo León	†	24° 44'	99° 53'	†	1941	Adjacent to Río San Juan	†
Jáurez, Chihuahua	S	31° 44'	106° 29'	3,740	# 1903	El Paso to Ft. Quitman	Hydr. Resources
Jiménez, Chihuahua	†	27° 08'	104° 55'	4,490	# 1951	Río Conchos	Meteor. Service of Chihuahua
Jiménez, Coahuila	S	29° 04'	100° 40'	814	# 1951	Del Rio to Eagle Pass	I. B. & W. C.
La Boquilla, Chihuahua	S	27° 32'	105° 25'	4,330	# 1910	Río Conchos	Río Conchos Hydro-electric Co.
La Junta, Chihuahua	S	28° 26'	107° 20'	6,730	# 1925	Adjacent to Río Conchos	Hydr. Resources
La Soledad, Chihuahua	†	28° 09'	105° 29'	†	# 1956	Río Conchos	Meteor. Service of Chihuahua
Laguna de Salinillas, Nuevo León	S	27° 32'	100° 34'	750	# 1940	Río Salado	Hydr. Resources
Laguna de Sánchez, Nuevo León	R	25° 21'	100° 16'	6,500	Apr. 1941	Río San Juan	Hydr. Resources
Las Burras, Chihuahua	†	28° 27'	105° 26'	3,586	July 1949	Río Conchos	Meteor. Service of Chihuahua
Las Choyas, Chihuahua	†	29° 18'	106° 11'	†	1955	Adjacent to Río Conchos	Hydr. Resources
Las Comitas, Nuevo León	S	25° 26'	100° 09'	1,670	1940	Adjacent to Río San Juan	Hydr. Resources
Las Enramadas, Nuevo León	S	25° 48'	99° 16'	730	# Sept. 1926	Río San Juan	Hydr. Resources
Las Vírgenes, Chihuahua	S	28° 10'	105° 38'	4,070	# 1943	Río Conchos	Hydr. Resources
Linares, Nuevo León	R	24° 52'	99° 34'	1,180	# 1900	Adjacent to Río San Juan	Hydr. Resources
Los Herrera (La Tableta), Nuevo León	R	25° 55'	99° 24'	820	Sept. 1939	Río San Juan	Hydr. Resources
Los Ojos, Chihuahua	†	29° 06'	106° 15'	†	1957	Adjacent to Río Conchos	Meteor. Service of Chihuahua
Los Pozos, Chihuahua	†	28° 53'	106° 02'	†	# 1956	Río Conchos	Meteor. Service of Chihuahua
Los Ramones, Nuevo León	R	25° 42'	99° 38'	270	# Sept. 1939	Río San Juan	Hydr. Resources
Maclovio Herrera (Palomir), Chihuahua	S	29° 03'	105° 08'	3,380	# 1924	Río Conchos	Meteor. Service of Mexico
Mayjoma, Chihuahua	†	28° 54'	104° 20'	†	Aug. 1955	Río Conchos	Meteor. Service of Chihuahua

Some months missing

† Some years and months missing

† Not available

R Recording

S Standard

LOCATION OF RAINFALL STATIONS ON THE RIO GRANDE WATERSHED

In Mexico

NAME OF STATION	TYPE GAGE	LATI-TUDE	LONGI-TUDE	ELEV. (FT.)	RECORD BEGAN	WATERSHED SUBDIVISION	OBSERVER
Méndez, Tamaulipas	S	25° 07'	98° 35'	420	#Sept. 1939	Adjacent to Lower Rio Grande Valley	Hydr. Resources
Monclova, Coahuila	S	26° 54'	101° 25'	1,940	# 1897	Río Salado	Meteor. Service of Mexico
Montemorelos, Nuevo León	S	25° 12'	99° 50'	1,420	#Aug. 1904	Río San Juan	Hydr. Resources
Monterrey, Nuevo León	S	25° 40'	100° 18'	1,730	# 1896	Río San Juan	Hydr. Resources
Múzquiz, Coahuila	S	27° 52'	101° 31'	1,650	# 1923	Río Salado	Meteor. Service of Mexico
Nueva Cd. Guerrero, Tamaulipas	S	26° 34'	99° 14'	348	May 1954	Laredo to Falcón Dam	I.B. & W.C.
Nueva Rosita, Coahuila	S	27° 56'	101° 13'	1,410	#Aug. 1925	Río Salado	Meteor. Service of Mexico
Nuevo Laredo, Tamaulipas	†	27° 29'	99° 31'	420	1950	Laredo to Falcón Dam	I.B. & W.C.
Nuevo Laredo, Tamaulipas	S	27° 29'	99° 31'	420	# 1909	Laredo to Falcón Dam	Meteor. Service of Mexico
Ojinaga, Chihuahua	S	29° 33'	104° 28'	2,585	Apr. 1954	Río Conchos	I.B. & W.C.
Ojinaga, Chihuahua	S	29° 34'	104° 26'	2,620	#Nov. 1906	Río Conchos	Meteor. Service of Mexico
Ojo Caliente, Chihuahua	S	27° 41'	105° 13'	4,010	1942	Río Conchos	Hydr. Resources
Palestina, Coahuila	S	29° 08'	100° 57'	1,080	† 1931	Del Rio to Eagle Pass	Hydr. Resources
Parral, Chihuahua	S	26° 56'	105° 39'	5,740	# 1903	Río Conchos	Meteor. Service of Mexico
Piedras Negras, Coahuila	S	28° 42'	100° 31'	715	# 1951	Del Rio to Eagle Pass	I.B. & W.C.
Planta Zootécnica, Chihuahua	†	28° 41'	106° 04'	†	#Mar. 1957	Río Conchos	Meteor. Service of Chihuahua
Progreso, Coahuila	S	27° 25'	101° 00'	1,210	Feb. 1943	Río Salado	Hydr. Resources
Ramos Arizpe, Coahuila	S	25° 32'	100° 57'	4,590	#Apr. 1907	Río San Juan	Meteor. Service of Mexico
Rancho los Vidrios, Tamaulipas	S	27° 36'	99° 37'	446	Sept. 1956	Eagle Pass to Laredo	H. Vidrio
Rancho San Juan de la Palma, Tamaulipas	S	26° 53'	99° 22'	348	Apr. 1955	Laredo to Falcón Dam	I.B. & W.C.
Rayones, Nuevo León	S	25° 01'	100° 05'	1,970	#Oct. 1926	Río San Juan	Hydr. Resources
Reata, Coahuila	S	26° 07'	101° 04'	3,070	#July 1944	Río San Juan	Hydr. Resources
Retamal, Tamaulipas	S	26° 02'	98° 02'	82	Oct. 1949	Lower Rio Grande Valley	I.B. & W.C.
Reynosa, Tamaulipas	R	26° 06'	98° 17'	130	# 1941	Lower Rio Grande Valley	Hydr. Resources
Rinconada, Nuevo León	S	25° 40'	100° 40'	4,790	Apr. 1944	Río San Juan	Hydr. Resources
Río Bravo, Tamaulipas	S	26° 00'	98° 06'	85	#Sept. 1950	Lower Rio Grande Valley	Hydr. Resources
Rosetilla, Chihuahua	S	28° 14'	105° 19'	3,780	1940	Río Conchos	Río Conchos Hydro-electric Co.
Sabinas, Coahuila	S	27° 50'	101° 08'	1,440	#May 1922	Río Salado	Hydr. Resources
Saltillo, Coahuila	S	25° 26'	101° 00'	5,280	# 1886	Río San Juan	Hydr. Resources
San Antonio, Durango	S	26° 25'	105° 21'	5,430	1943	Río Conchos	Hydr. Resources
San Buenaventura, Coahuila	S	27° 05'	101° 33'	2,300	#Dec. 1926	Río Salado	Meteor. Service of Mexico
San Isidro, Chihuahua	†	27° 09'	105° 56'	†	Aug. 1957	Río Conchos	Meteor. Service of Chihuahua
San Juan, Nuevo León	†	25° 33'	99° 50'	876	Nov. 1943	Río San Juan	†
San Miguel de Camargo, Tamaulipas	S	26° 14'	98° 36'	130	# 1953	Lower Rio Grande Valley	Hydr. Resources
Santa Catarina, Nuevo León	R	25° 41'	100° 26'	1,970	Oct. 1937	Río San Juan	Hydr. Resources
Santa Rita, Chihuahua	†	27° 15'	105° 28'	†	# 1956	Río Conchos	Meteor. Service of Chihuahua
Siquiritchic, Chihuahua	†	27° 09'	107° 12'	†	July 1956	Adjacent to Río Conchos	Meteor. Service of Chihuahua
Topo Chico, Nuevo León	R	25° 49'	100° 20'	1,640	#Aug. 1939	Río San Juan	Hydr. Resources
Valle Hermoso, Tamaulipas	S	25° 41'	97° 48'	56	#June 1949	Lower Rio Grande Valley	Hydr. Resources
Villa Allende, Nuevo León	S	25° 17'	100° 01'	2,210	#Nov. 1938	Río San Juan	Hydr. Resources
Villa de Santiago, Nuevo León	S	25° 25'	100° 07'	1,480	# 1923	Río San Juan	Hydr. Resources
Villa Hidalgo, Coahuila	S	27° 47'	99° 52'	499	1951	Eagle Pass to Laredo	I.B. & W.C.
Villa Juárez, Coahuila	S	27° 37'	100° 44'	900	# 1943	Río Salado	Hydr. Resources
Villagrán, Tamaulipas	R	24° 29'	99° 29'	1,250	#Sept. 1939	Adjacent to Río San Juan	Hydr. Resources
Villalba, Chihuahua	S	28° 01'	105° 46'	3,940	Oct. 1940	Río Conchos	Hydr. Resources
Zubía, Chihuahua	†	28° 27'	106° 28'	†	# 1955	Río Conchos	Meteor. Service of Chihuahua

Some months missing † Some years and months missing † Not available R Recording S Standard

**EVAPORATION IN THE RIO GRANDE BASIN
IN INCHES**
In the United States

Tabulated below are records of evaporation observed at six stations from Presidio, Texas to Falcón Dam near Roma, Texas. All of these stations were operated and maintained by the United States Section of this Commission, except the one at Del Rio, Texas which was operated by the U.S. Weather Bureau. At all stations, the exposure to wind was uniform and relatively unimpeded. The sites were kept cleared of all high brush and trees within 150 feet and of all brush and tall weeds within 100 feet of the fenced enclosures. Within the enclosures, all vegetation either had been eradicated or was kept trimmed to within 3 inches of the ground surface. No water barrels, tanks, or objects of similar size were stored within 100 feet of the enclosures.

Three types of pans were used at four of these stations:

1. U.S. Weather Bureau Standard Pan. A circular pan, 4 feet in diameter and 10 inches deep, made of 22-gage galvanized iron, is set on a wooden platform with the rim of the pan 16 inches above the ground. The water level is maintained between 2 and 3 inches below the rim of the pan. This type of pan was in operation at Del Rio and Falcón Dam, Texas.

2. A circular pan, 2 feet in diameter and 36 inches deep, made of 22-gage galvanized iron, is set in the ground with the rim of the pan 3 inches above the ground surface and the top covered with a circular screen of No. 4 (1/4" mesh) galvanized hardware cloth. The water level is maintained between 2.5 and 3.5 inches below the rim of the pan. This type of pan was in operation at Falcón Dam, Texas. This same type of pan, equipped with an automatic feed tank that maintains the water at a level 3 inches below the rim of the pan, was in operation at Martin King Ranch and Wardlaw Ranch.

3. A circular pan, 12 feet in diameter and 36 inches deep, made of 20-gage galvanized iron, is set in the ground with the rim of the pan 3 inches above the ground surface. The water level is maintained between 2.5 and 3.5 inches below the rim of the pan. This type of pan was in operation at Falcón Dam, Texas.

An evaporometer developed by the United States Section of this Commission and calibrated against a 2-foot pan, described above, was in operation at Presidio and Johnson Ranch, Texas.

Month	Presidio, Texas		Johnson Ranch, Texas		Martin King Ranch		Wardlaw Ranch	
	1957	Average 1950-1957	1957	Average 1950-1957	1957	Average March 1956-1957	1957	Average Sept. 1955-1957
Jan.	4.20	4.00	4.67	4.35	3.44		3.17	2.84
Feb.	4.98	5.26	4.62	5.82	3.48		3.42	4.02
Mar.	8.97	8.94	8.05	9.04	6.54	7.16	6.96	7.20
Apr.	10.32	10.83	9.42	11.12	6.73	7.96	6.37	7.54
May	11.22	13.28	11.72	13.38	6.37	9.39	4.92	8.27
June	12.68	14.33	11.28	14.49	9.43	13.07	7.64	11.28
July	14.19	13.55	13.09	15.02	15.05	14.78	13.86	15.24
Aug.	12.58	13.56	12.26	13.76	14.85	14.20	14.14	13.72
Sept.	10.24	11.82	10.16	11.54	8.65	9.54	7.64	8.41
Oct.	6.52	8.72	7.20	9.03	5.93	7.48	5.15	6.97
Nov.	4.30	5.52	4.30	5.73	2.86	4.35	3.15	4.97
Dec.	3.18	3.76	3.63	4.27	3.63	3.60	3.03	3.22
Total	103.38	113.57	100.40	117.55	86.96		79.45	93.68

Month	Del Rio, Texas		Falcón Dam, Texas					
			2-Foot Pan		4-Foot Pan		12-Foot Pan	
	1957	Average June 1952 Aug. 1957	1957	Average April 1950-1957	1957	Average April 1956-1957	1957	Average April 1956-1957
Jan.	3.45	4.06	3.98	4.20	5.06		3.75	
Feb.	4.11	5.65	4.86	5.44	6.72		4.91	
Mar.	9.83	9.11	7.53	7.81	11.40		7.72	
Apr.	9.50	10.86	7.35	8.59	10.68	10.69	5.88	6.54
May	8.03	12.60	8.85	10.57	12.00	13.61	8.72	9.49
June	10.60	14.55	9.88	12.23	13.22	14.38	9.71	10.64
July	16.34	16.62	14.62	14.07	17.91	18.54	13.16	13.34
Aug.	15.12	14.92	13.33	12.40	16.84	16.62	11.85	12.00
Sept.		11.47	10.17	9.05	12.09	12.78	8.78	9.18
Oct.	Station discontinued Sept. 1, 1957	8.80	7.37	7.37	8.50	9.98	6.10	7.12
Nov.		5.53	4.52	5.43	6.44	7.06	4.25	5.01
Dec.		4.18	4.05	4.40	5.49	5.42	3.89	3.93
Total		118.35	96.51	101.56	126.35		88.72	

**EVAPORATION IN THE RIO GRANDE BASIN
IN INCHES
In Mexico**

Tabulated below are records of evaporation observed at nine stations operated and maintained by the Mexican Section of this Commission. Eight stations are located along the Rio Grande from Cd. Acuña, Coahuila to Retamal, Tamaulipas and one is located on the Rio Conchos near Ojinaga, Chihuahua. At all stations, except Ojinaga, the sites were kept cleared of all high brush and trees within 150 feet and of all brush and tall weeds within 100 feet of the fenced enclosures. There are several large trees at the Ojinaga station. The corrugated iron gage well, 42 inches in diameter, and one A-frame of the cableway of the Rio Conchos stream-gaging station are in the north end of the enclosure. Inside the enclosures, all vegetation either had been eradicated or was kept trimmed to within 3 inches of the ground surface. Except for a water barrel and a thermometer shelter in the northeast and northwest corners of the enclosures, the exposure to wind was uniform and relatively unimpeded.

The type of pan used at all these stations was a U.S. Weather Bureau Standard Pan, 4 feet in diameter and 10 inches deep, made of 22-gage galvanized iron, set on a wooden platform with the rim of the pan 16 inches above the ground. The water level was maintained between 2 and 3 inches below the rim of the pan and was measured with a micrometer gage.

Data for other evaporation stations in the Rio Grande Basin in Mexico, which were operated by various Mexican agencies, are available in Water Bulletin No. 27, published by the Mexican Section of this Commission.

Month	Ojinaga, Chih.		Cd. Acuña, Coah.		Jiménez, Coah.		Piedras Negras, Coah.		Hidalgo, Coah.	
	1957	Average April 1954-1957	1957	Average 1951-1957	1957	#Average 1951-1957	1957	#Average 1951-1957	1957	Average 1951-1957
Jan.	3.51	3.16	2.99	3.88	2.52	3.37	3.02	3.35	3.67	4.85
Feb.	3.99	4.38	3.69	5.32	3.77	4.76	4.23	4.71	5.96	6.16
Mar.	6.55	7.15	8.78	8.50	7.23	7.32	8.99	7.58	9.46	9.36
Apr.	8.91	9.24	8.30	9.72	7.16	8.41	8.43	8.98	9.11	11.35
May	10.63	11.54	8.06	10.89	7.05	9.78	7.18	10.29	10.87	13.79
June	11.45	12.32	9.68	12.49	9.25	11.70	8.43	11.65	13.44	15.07
July	11.88	12.04	13.79	14.12	13.07	13.36	13.10	13.76	18.03	17.51
Aug.	10.32	9.76	12.90	12.94	12.48	11.93	13.17	12.72	15.82	16.25
Sept.	8.24	8.21	8.84	9.49	8.65	8.33	8.27	8.35	11.00	11.48
Oct.	4.71	5.82	5.27	6.65	5.14	6.02	4.47	6.14	6.55	8.57
Nov.	2.95	3.73	2.34	4.18	2.70	3.67	2.78	3.79	3.31	5.30
Dec.	2.78	2.95	3.13	3.64	3.02	3.19	3.44	3.28	3.59	4.68
Total	85.92	90.30	87.77	101.82	82.04	91.84	85.51	94.60	110.81	124.37

Month	Nueva Cd. Guerrero, Tamps.		Rancho San Juan de la Palma, Tamps.		Cd. Mier, Tamps.		Retamal, Tamps.	
	1957	Average June 1954-1957	1957	Average April 1955-1957	1957	Average Oct., 1955-1957	1957	Average 1951-1957
Jan.	4.17	4.31	3.91	3.96	4.32	4.22	4.28	4.81
Feb.	5.60	4.62	5.80	5.88	5.94	5.84	4.99	5.28
Mar.	8.84	7.78	7.50	8.00	8.84	8.74	6.02	7.09
Apr.	8.33	9.61	9.07	9.88	8.43	9.16	6.69	8.58
May	10.61	12.62	12.58	12.13	10.52	11.58	7.45	9.45
June	11.69	11.97	11.64	13.29	12.39	13.40	7.09	9.70
July	15.63	14.74	15.51	15.47	17.42	16.94	10.91	10.05
Aug.	14.61	13.80	15.54	14.94	15.58	15.76	10.18	10.00
Sept.	10.70	10.74	11.77	11.13	11.61	11.70	8.09	7.33
Oct.	7.96	8.48	8.13	8.86	8.96	9.35	6.85	6.37
Nov.	(No Record)	6.14	4.60	5.27	5.04	5.26	3.80	4.30
Dec.		4.53	4.57	4.52	4.40	4.36	4.20	4.17
Total		109.34	110.62	113.33	113.45	116.31	80.55	87.13

* Some months missing

TEMPERATURE, HUMIDITY, AND WIND

The mean monthly temperatures shown for the stations in Mexico are averages of daily maximum and minimum thermometer observations.

The mean monthly temperatures and relative humidities shown for stations in the United States were integrated from continuous records of hygrothermographs, housed in lowered shelters, with the sensing elements of the instruments 16 inches above the ground and 9 feet southwest of either a 2 or 4-foot diameter evaporation pan.

Monthly mean wind velocities are based on the total miles of wind movement indicated by a standard 3-cup anemometer installed and operated according to specifications for a Class A Weather Bureau evaporation station.

Mean Temperature — Degrees Fahrenheit In the United States

Month	Tortuga Ranch, Texas		Falcon Dam, Texas	
	1957	Average June 1955-1957	1957	Average July 1950-1957
Jan.	52.6	52.7	58.7	60.9
Feb.	62.1	59.4	65.7	64.1
Mar.	63.3	64.2	66.7	70.1
Apr.	67.2	69.4	70.7	75.9
May	74.9	77.6	78.4	80.8
June	82.0	85.8	81.6	85.5
July	89.2	86.3	86.3	87.2
Aug.	87.8	86.5	86.0	87.2
Sept.	79.2	79.9	80.1	82.6
Oct.	67.1	70.7	72.2	75.4
Nov.	54.0	57.1	59.8	63.9
Dec.	52.7	52.9	59.3	59.7
Yearly	832.1	842.5	865.5	893.3

In Mexico

Month	Ojinaga, Chihuahua		Cd. Acuña, Coahuila		Jiménez Coahuila		Piedras Negras, Coahuila		Villa Hidalgo, Coahuila	
	1957	Avg. Apr. 1954-1957	1957	Avg. Apr. 1951-1957	1957	#Avg. Mar. 1951-1957	1957	#Avg. Apr. 1951-1957	1957	*Avg. Aug. 1951-1957
Jan.	51.4	49.6	51.8	53.6	53.2	55.1	50.7	52.7	57.2	57.1
Feb.	61.5	54.5	63.3	58.8	64.2	60.0	61.2	57.0	67.8	60.4
Mar.	59.0	59.7	64.0	65.3	64.4	65.2	61.2	62.3	68.2	67.6
Apr.	67.6	68.2	68.7	72.8	68.7	72.0	66.2	69.9	72.5	75.1
May	74.7	76.5	76.3	79.7	74.1	77.8	72.7	76.6	79.5	80.0
June	82.8	83.4	84.6	86.4	82.4	84.8	79.2	83.8	86.0	86.4
July	85.8	84.4	89.6	89.2	87.4	87.1	84.2	86.3	89.8	87.5
Aug.	81.5	82.1	89.6	89.5	86.7	87.0	85.3	86.0	89.6	87.5
Sept.	78.4	78.5	81.7	83.4	79.5	80.4	76.3	78.2	82.4	82.3
Oct.	66.6	68.2	69.8	72.8	69.4	72.3	63.3	67.6	72.1	74.5
Nov.	52.9	54.4	55.9	58.6	57.2	59.9	51.1	55.8	60.1	61.8
Dec.	50.7	50.3	53.2	52.8	54.0	54.0	51.3	51.6	57.9	56.8
Yearly	812.9	809.8	848.5	862.9	841.2	855.6	802.7	827.8	883.1	877.0

Month	Rancho los Vidrios, Tamaulipas		Rancho San Juan de la Palma, Tamps.		Cd. Mier, Tamaulipas		Retamal, Tamaulipas	
	1957	Avg. Sept. 1956-1957	1957	Avg. Apr. 1955-1957	1957	Avg. Oct. 1955-1957	1957	Average 1951-1957
Jan.	59.4		61.9	61.4	62.2	61.6	66.2	64.7
Feb.	68.9		68.7	66.8	69.4	66.6	70.5	65.8
Mar.	71.2		60.4	64.8	70.2	70.2	70.2	72.3
Apr.	75.6		64.8	71.6	75.9	76.1	75.2	77.9
May	81.3		82.8	81.9	82.8	82.8	84.2	85.8
June	86.7		87.1	87.4	86.9	86.9	86.7	86.5
July	87.8		90.9	89.2	89.6	89.0	87.8	87.8
Aug.	88.5		89.6	89.4	89.6	89.2	84.4	83.1
Sept.	82.0	82.9	84.2	84.7	83.8	84.4	84.0	83.1
Oct.	73.8	77.2	74.8	76.9	76.3	77.1	77.4	76.7
Nov.	59.7	61.5	63.3	63.9	63.5	64.6	69.4	67.0
Dec.	58.3	59.4	61.9	60.6	62.2	62.2	67.6	63.5
Yearly	893.2		890.4	898.6	912.4	910.7	920.2	912.6

Some months missing

TEMPERATURE, HUMIDITY, AND WIND

Mean Relative Humidity – Percent

Mean Wind Speed – Miles Per Hour

In the United States

Month	Tortuga Ranch, Texas		Falcón Dam, Texas	
	1957	Average June 1955-1957	1957	Average July 1950-1957
Jan.	69.4	73.4	67.1	62.0
Feb.	75.8	68.6	71.4	59.3
Mar.	57.9	55.7	59.5	57.6
Apr.	69.8	64.3	67.4	59.1
May	76.1	69.6	66.1	62.1
June	68.5	62.6	67.8	62.3
July	53.8	60.9	55.0	57.6
Aug.	57.4	61.7	55.5	58.8
Sept.	66.0	66.9	61.1	62.9
Oct.	71.8	64.9	60.6	61.1
Nov.	85.4	71.2	74.5	62.2
Dec.	70.4	64.8	64.6	58.6
Yearly	822.3	784.6	770.6	723.6

In the United States

Martin King Rch.	Tortuga Ranch, Texas		Falcón Dam, Texas	
	1957	1957	Average June 1955-1957	1957
4.7	3.3	2.4	4.1	4.1
4.8	4.0	3.4	5.2	5.1
6.8	5.2	4.3	5.6	5.7
7.8	6.2	5.8	7.8	6.6
7.1	4.9	5.8	5.8	6.7
8.2	4.9	6.0	5.7	7.2
7.7	5.0	5.5	6.8	7.3
7.4	4.6	4.5	7.2	6.2
6.0	4.1	3.7	5.5	4.8
6.1	3.8	3.6	4.9	4.0
4.2	2.2	3.0	5.2	4.4
4.5	3.7	2.9	4.1	3.9
75.3	51.9	50.9	67.9	66.0

DRAINAGE BASIN AND IRRIGATED AREAS Along the Rio Grande and Tributaries - 1957

The total area within the outer rim of the Rio Grande Basin is about 335,500 square miles; however, in many places, particularly along the southwestern boundary of the basin, large areas contribute no surface runoff to the Rio Grande. Such non-contributive areas constitute about 45.7% of the total area, leaving 182,215 square miles of productive watershed. Only the productive part of the watershed is included in the list below.

The irrigated areas shown below are from the most reliable sources available and are listed according to the downstream sequence of the points of diversion of their irrigation water and, consequently, they may or may not be wholly within the indicated main river or tributary reach. They are all within the Rio Grande Basin, except in the Lower Rio Grande Valley below the Rio Grande City gaging station, where water is diverted at numerous points to irrigate lands which are adjacent to but do not contribute surface runoff to the Rio Grande.

For both countries, only areas irrigated in 1957 are shown below except that, on the United States side below Chapeño, the figures shown represent acreages which were subject to irrigation in 1957 but for which data on the portion actually irrigated is not known.

DESIGNATIONS OF AREAS AND GAGING STATIONS	Drainage Basin Square Miles			Irrigated Areas—Acres		
	United States	Mexico	Total	United States	Mexico	Total
Above Elephant Butte Dam	25,923	0	25,923			
Elephant Butte Dam to Caballo Dam	1,295	0	1,295	0	0	0
Above Caballo Dam	27,218	0	27,218	0	0	0
Caballo Dam to El Paso Station	2,049	0	2,049	91,895	0	91,895
Above El Paso Gaging Station	29,267	0	29,267	91,895	0	91,895
El Paso Station to American Dam	4	0	4	12,303	0	12,303
Above American Dam	29,271	0	29,271	104,198	0	104,198
American Dam to Island Station	187	493	680	29,403	15,382	44,785
Above Island Gaging Station	29,458	493	29,951	133,601	15,382	148,983
Island Station to County Line Station	485	174	659	0	0	0
American Dam to County Line Station - Total	672	667	1,339	29,403	15,382	44,785
Above County Line Gaging Station	29,943	667	30,610	133,601	15,382	148,983
County Line Station to Fort Quitman Station	663	762	1,425	4,528	0	4,528
Above Fort Quitman Gaging Station	30,606	1,429	32,035	138,129	15,382	153,511
Fort Quitman to Upper Presidio Station	1,621	1,332	2,953	a 1,177	109	1,286
Above Upper Presidio Gaging Station	32,227	2,761	34,988	T39,306	15,491	154,797
Río Conchos above Boquilla Dam	0	8,202	8,202	0	4,942	4,942
Río Conchos below Boquilla Dam	0	21,065	21,065	0	220,273	220,273
Río Conchos - Total	0	29,267	29,267	0	225,215	225,215
Alamito Creek above Gaging Station	1,504	0	1,504	b 488	0	488
Upper Presidio to Lower Presidio Gaging Station - excluding above tributaries	367	77	444	2,949	571	3,520
Upper Presidio to Lower Presidio - Total	1,871	29,344	31,215	3,437	225,786	229,223
Above Lower Presidio Gaging Station	34,098	32,105	66,203	142,743	241,277	384,020
Terlingua Creek above Gaging Station	1,070	0	1,070	c 1,800	0	1,800
Lower Presidio to Johnson Ranch Station - excluding Terlingua Creek	1,093	2,349	3,442	1,118	3,403	4,521
Lower Presidio to Johnson Ranch Station - Total	2,163	2,349	4,512	2,918	3,403	6,321
Above Johnson Ranch Gaging Station	36,261	34,454	70,715	145,661	244,680	390,341
Johnson Ranch Station to Langtry Station	6,594	7,486	14,080	d 5,447	0	5,447
Above Langtry Gaging Station	42,855	41,940	84,795	T51,108	244,680	395,788
Pecos River above Girvin	29,562	0	29,562			
Pecos River, Girvin to Shumla Station	5,600	0	5,600	0	0	0
Pecos River - Total	35,308	0	35,308	0	0	0
Goodenough Spring above Gaging Station	1	0	1	0	0	0
Devils River above Upper Devils Station	3,903	0	3,903	0	0	0
Devils River above Devils River Station	4,185	0	4,185	0	0	0
Devils River - Above Station near Mouth	4,305	0	4,305	0	0	0
Langtry Station to Below Diablo Dam Site Station - excluding above tributaries	221	1,793	2,014	0	0	0
Langtry Station to below Diablo Dam Site Station - Total	39,835	1,793	41,628	0	0	0
Above the Below Diablo Dam Site Gaging Station	82,690	43,733	126,423	151,108	244,680	395,788

a Includes 35 acres irrigated by spreader dams. b Includes 247 acres irrigated by spreader dams. c Irrigated by spreader dams. d Includes 5,387 acres irrigated by spreader dams.

DRAINAGE BASIN AND IRRIGATED AREAS
Along the Rio Grande and Tributaries - 1957

DESIGNATIONS OF AREAS AND GAGING STATIONS	Drainage Basin Square Miles			Irrigated Areas—Acres		
	United States	Mexico	Total	United States	Mexico	Total
Arroyo las Vacas above Gaging Station	0	358	358	0	988	988
San Felipe Creek above Gaging Station	46	0	46	1,016	0	1,016
Below Diablo Dam Site Station to Below Maverick Dam Station - excluding above tributaries	627	210	837	34,640	1,935	36,575
Below Diablo Dam Site Station to Below Maverick Dam - Total	673	568	1,241	35,656	2,923	38,579
Above the Below Maverick Dam Gaging Station	83,363	44,301	127,664	186,764	247,603	434,367
Pinto Creek above Gaging Station	249	0	249	30	0	30
Río San Diego above Gaging Station	0	848	848	0	8,290	8,290
Río San Diego - Total	0	856	856	0	9,279	9,279
Río San Rodrigo above Gaging Station	0	669	669	0	5,313	5,313
Río San Rodrigo - Total	0	958	958	0	5,313	5,313
Maverick Dam Station to Maverick Power Plant - excluding above tributaries	389	181	570	305	0	305
Maverick Dam Station to Maverick Power Plant - Total	638	1,995	2,633	335	14,592	14,927
Above Maverick Power Plant	84,001	46,296	130,297	187,099	262,195	449,294
Maverick Power Plant to Eagle Pass Station	244	34	278	218	2,617	2,835
Above Eagle Pass Gaging Station	84,245	46,330	130,575	187,317	264,812	452,129
Río Escondido above Gaging Station	0	1,279	1,279	0	10,502	10,502
Río Escondido - Total	0	1,284	1,284	0	10,502	10,502
Eagle Pass Station to San Antonio Crossing Station - excluding Río Escondido	237	251	488	250	791	1,041
Eagle Pass to San Antonio Crossing Station - Total	237	1,535	1,772	250	11,293	11,543
Above San Antonio Crossing Gaging Station	84,482	47,865	132,347	187,567	276,105	463,672
San Antonio Crossing to Laredo Station	1,236	2,393	3,629	5,940	15,585	21,525
Above Laredo Gaging Station	85,718	50,258	135,976	193,507	291,690	485,197
Río Salado above Venustiano Carranza Dam	0	17,296	17,296	0	58,811	58,811
Río Salado above Las Tortillas Gaging Station	0	24,877	24,877	0	81,526	81,526
Río Salado above Cd. Guerrero Gaging Station	0	25,112	25,112	0	81,526	81,526
Laredo Station to Falcón Dam - excluding Río Salado	2,042	1,352	3,394	e 10,197	8,762	18,959
Laredo Station to Falcón Dam - Total	2,042	26,464	28,506	e 10,197	90,288	100,485
Above Falcón Dam	87,760	76,722	164,482	203,704	381,978	585,682
Falcón Dam to Chapeño Gaging Station	2	54	56	0	0	0
Above Chapeño Gaging Station	87,762	76,776	164,538	203,704	381,978	585,682
Río Alamo above Gaging Station	0	1,692	1,692	0	7,660	7,660
Río San Juan above Marte Gómez Dam	0	13,429	13,429	0	102,548	102,548
Río San Juan - Marte Gómez Dam to Camargo Gaging Station	0	172	172	0	175,560	175,560
Río San Juan - Total	0	13,601	13,601	0	278,108	278,108
Chapeño Station to Fort Ringgold Station - excluding above tributaries	220	345	565	9,087	4,582	13,669
Chapeño Station to Fort Ringgold - Total	220	15,638	15,858	9,087	290,350	299,437
Above Fort Ringgold Gaging Station	87,982	92,414	180,396	212,791	672,328	885,119
Fort Ringgold Station to Anzaldías Dam Site	952	790	1,742	183,879	508,611	692,490
Above Anzaldías Dam Site	88,934	93,204	182,138	396,670	1,180,939	1,577,009
Anzaldías Dam Site to Progreso Station	13	22	35	141,295	7,055	148,350
Above Progreso Gaging Station	88,947	93,226	182,173	537,965	1,187,994	1,725,959
Progreso Station to San Benito Station	7	7	14	328,305	4,989	333,294
Above San Benito Gaging Station	88,954	93,233	182,187	866,270	1,192,983	2,059,253
San Benito Station to Lower Brownsville Station	14	14	28	101,010	2,464	103,474
Fort Ringgold Station to Lower Brownsville Station	986	833	1,819	754,489	523,119	1,277,608
Above Lower Brownsville Gaging Station	88,968	93,247	182,215	967,280	1,195,447	2,162,727
Lower Brownsville Station to Gulf of Mexico				6,425	1,134	7,559
Above Gulf of Mexico				973,705	1,196,581	2,170,286

e Excludes 45 acres irrigated from small reservoirs.

SUPPLEMENTARY DATA—INTERNATIONAL FALCON RESERVOIR

Deduced Inflows

Considering that a knowledge of the mean daily inflows reaching the International Falcón Reservoir would serve a useful purpose, such data have been deduced for 1957 showing the flows as close as they can be approximated. These data are based on the daily operation of the International Falcón Reservoir, taking into account: a) record of gage-heights at the dam; b) releases as measured at both hydroelectric plants and outlet works; c) elevation-area-capacity tables based on 1954 surveys; and d) rate of evaporation measured at the dam applied to an area one foot higher than the average area of two consecutive days.

Flow contributions from different sources, irrigation diversions between Laredo and Falcón, river channel losses, reservoir evaporation, accuracy of gage-height records, displacement due to wind action on the reservoir, and seepage losses in the reservoir and through the dam, all tend to cause variations in the deduced determinations and the inflows shown below should not necessarily be in agreement with the combined flow of the Río Grande at Laredo and the Río Salado at Las Tortillas.

In spite of the deficiencies above noted and others that may occur, it is estimated that the data shown below represent a reasonable approximation of the daily flows entering the International Falcón Reservoir. Storage and other data may be found on pages 52, 105, and 106 in this bulletin.

Mean Daily Discharge in Second-Feet 1957 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1,150	1,050	2,100	505	42,000	18,300	1,960	1,950	2,280	2,160	3,300	533
2	918	1,010	1,770	622	17,800	35,100	1,530	2,180	1,920	1,970	2,720	4,130
3	957	1,050	1,590	1,080	9,320	34,500	1,610	2,070	2,260	2,110	2,320	1,510
4	1,190	1,050	1,400	1,190	6,110	19,900	2,310	1,600	2,270	2,210	3,370	1,110
5	848	996	1,290	1,160	2,910	12,500	1,690	1,790	2,440	1,080	2,820	2,970
6	1,200	961	2,460	639	3,920	7,420	2,100	1,950	1,740	3,020	2,630	1,380
7	791	943	1,470	742	3,490	7,380	2,090	2,080	1,070	2,070	2,840	1,130
8	911	911	1,410	600	3,270	5,470	1,200	1,370	929	1,870	3,170	1,600
9	833	893	1,230	318	2,860	5,190	1,140	1,160	1,360	2,660	3,220	2,320
10	879	872	1,450	533	3,040	4,100	1,180	1,290	1,660	4,100	5,860	2,040
11	660	703	2,500	367	3,230	3,530	858	2,040	2,610	6,040	1,930	953
12	879	611	1,930	300	3,600	3,020	1,290	1,260	1,650	4,240	1,050	1,150
13	650	593	1,150	332	24,700	3,220	1,190	1,430	1,820	3,640	2,480	1,480
14	964	547	1,380	639	38,800	3,990	1,010	1,870	2,120	3,960	2,200	2,150
15	1,060	671	1,250	1,650	30,900	3,920	1,050	1,290	2,180	3,640	2,210	2,680
16	678	1,320	1,590	4,560	44,500	5,330	911	1,700	1,840	2,940	2,290	1,480
17	576	1,600	1,280	3,080	32,600	2,390	1,000	2,080	1,920	5,440	1,800	2,280
18	607	1,480	1,080	2,100	34,900	6,850	1,070	1,270	1,080	13,200	2,300	2,160
19	562	1,390	897	2,090	33,100	5,300	5,900	4,240	901	8,330	1,250	4,060
20	1,180	1,050	855	6,110	38,100	5,790	1,840	1,710	1,980	4,870	1,960	554
21	865	1,180	915	18,700	33,900	4,840	1,260	1,980	2,290	4,030	5,440	1,570
22	1,070	1,540	1,560	5,720	21,100	4,700	1,670	1,370	22,700	4,450	1,460	1,700
23	498	1,490	1,340	8,190	7,910	3,440	406	1,750	25,200	11,000	530	1,850
24	823	1,820	1,150	16,100	30,300	3,530	1,060	2,260	11,900	4,060	452	3,140
25	696	1,990	1,030	3,220	4,840	3,500	678	2,980	6,290	4,590	593	3,850
26	812	3,600	1,110	3,430	7,130	3,430	1,350	1,790	3,850	2,900	2,110	3,470
27	699	2,710	1,490	18,400	24,300	2,650	2,100	1,900	3,640	2,980	2,780	2,550
28	752	2,380	3,360	44,500	64,300	1,550	2,120	3,210	2,890	5,010	946	1,360
29	964			770	36,400	53,000	1,850	2,100	3,920	2,880	4,100	427
30	851			1,010	38,100	55,800	2,560	2,510	2,310	2,880	3,960	2,540
31	893			809	26,600	1,800	1,510			3,340		3,350

Month	Current Year 1957			Period								
	Extreme Gage Feet		Day	Extreme Second-Feet		Day	Low	Average Second-Feet	Total Acre-Feet	Acre-Feet		
	High	Low		High	Low					Average	Maximum	Minimum
Jan.			6	1,200	23	498		851				
Feb.			26	3,600	14	547		1,300				
Mar.			28	3,360	29	770		1,440				
Apr.			28	44,500	12	300		7,380				
May			28	64,300	9	2,860		22,000				
June			2	35,100	28	1,550		7,520				
July			30	2,510	23	406		1,450				
Aug.			19	4,240	9	1,160		2,000				
Sept.			23	25,200	19	901		4,030				
Oct.			18	13,200	5	1,080		4,200				
Nov.			10	5,860	29	427		2,300				
Dec.			2	4,130	1	533		2,090				
Yearly				64,300		300		4,730				

SUPPLEMENTARY DATA—INTERNATIONAL FALCON RESERVOIR

Daily Storage - 1957

Storage in Thousands of Acre-Feet at 24:00 Hours

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	274.4	158.9	189.0	258.8	743.6	1,773.0	1,973.3	1,860.5	1,688.3	1,733.7	1,751.7	1,790.6
2	273.6	158.1	192.4	258.2	778.3	1,835.3	1,971.9	1,859.2	1,676.8	1,734.3	1,751.7	1,793.2
3	273.0	157.5	195.2	258.3	795.4	1,901.1	1,970.6	1,857.3	1,667.2	1,734.3	1,751.7	1,793.8
4	272.3	157.0	197.7	258.8	806.3	1,934.3	1,967.9	1,855.3	1,658.2	1,734.3	1,754.2	1,793.8
5	270.8	156.2	199.8	259.2	810.7	1,942.3	1,964.5	1,854.0	1,651.0	1,731.2	1,755.1	1,793.8
6	269.9	155.3	204.3	259.8	818.0	1,942.3	1,961.8	1,852.8	1,645.0	1,727.5	1,756.7	1,794.4
7	268.2	153.3	206.8	261.0	824.3	1,941.0	1,958.4	1,851.5	1,640.2	1,722.0	1,758.6	1,794.4
8	266.7	151.8	209.2	261.6	829.1	1,940.3	1,952.4	1,850.2	1,636.7	1,716.4	1,761.7	1,795.1
9	262.8	150.3	211.1	261.9	832.8	1,942.3	1,947.7	1,848.9	1,633.7	1,710.3	1,764.8	1,796.3
10	257.7	150.0	212.8	262.8	836.9	1,943.0	1,942.3	1,842.4	1,630.7	1,707.9	1,776.1	1,797.6
11	251.5	149.3	216.2	263.2	841.4	1,941.0	1,937.6	1,836.0	1,627.8	1,711.5	1,778.6	1,797.0
12	244.4	148.3	219.3	263.5	845.5	1,939.0	1,933.6	1,828.2	1,623.0	1,712.1	1,779.3	1,797.0
13	236.4	146.8	221.2	263.8	890.9	1,937.0	1,929.0	1,821.2	1,618.3	1,709.7	1,782.4	1,797.0
14	229.2	145.1	223.7	263.8	964.2	1,934.3	1,923.6	1,814.8	1,615.4	1,707.9	1,785.0	1,797.6
15	222.4	143.7	226.0	266.8	1,019.5	1,931.0	1,919.6	1,807.8	1,611.3	1,706.0	1,787.5	1,798.9
16	215.1	143.7	229.1	275.6	1,097.6	1,929.0	1,915.7	1,800.8	1,607.2	1,704.2	1,790.0	1,798.2
17	208.7	145.7	231.5	281.4	1,150.7	1,924.3	1,912.4	1,794.4	1,604.8	1,709.7	1,791.3	1,798.2
18	202.4	148.5	233.5	285.1	1,207.0	1,931.6	1,909.7	1,787.5	1,603.0	1,730.6	1,793.8	1,798.9
19	195.3	151.2	234.8	289.0	1,252.3	1,941.0	1,905.1	1,783.7	1,601.3	1,742.4	1,793.8	1,796.3
20	191.6	153.2	236.3	300.7	1,308.7	1,949.7	1,901.8	1,779.3	1,599.5	1,745.5	1,795.1	1,790.6
21	187.3	155.5	237.7	334.2	1,360.6	1,955.7	1,897.2	1,774.2	1,597.8	1,747.4	1,801.4	1,785.0
22	183.2	158.5	240.3	344.8	1,384.1	1,961.1	1,893.2	1,769.2	1,639.6	1,750.5	1,798.2	1,779.9
23	179.4	161.4	242.2	359.4	1,379.9	1,964.5	1,889.3	1,764.2	1,687.7	1,764.8	1,794.4	1,776.1
24	176.7	164.9	243.9	390.7	1,367.9	1,967.9	1,884.7	1,759.2	1,709.1	1,766.1	1,793.8	1,774.9
25	173.7	168.8	245.5	395.2	1,353.3	1,970.6	1,880.8	1,754.8	1,719.5	1,766.7	1,793.8	1,774.9
26	171.5	175.4	247.4	398.2	1,339.4	1,973.3	1,877.5	1,747.4	1,724.4	1,756.7	1,793.8	1,773.6
27	168.8	180.6	249.9	429.2	1,376.8	1,973.9	1,874.2	1,738.7	1,728.1	1,758.6	1,793.8	1,773.0
28	166.1	185.1	256.3	515.6	1,502.9	1,973.3	1,871.0	1,730.6	1,730.6	1,758.6	1,793.8	1,769.8
29	164.0		257.5	586.7	1,606.6	1,973.3	1,867.7	1,722.0	1,732.5	1,756.1	1,791.9	1,766.7
30	162.0		259.1	661.1	1,715.2	1,973.9	1,865.7	1,712.1	1,733.7	1,753.0	1,791.3	1,764.8
31	160.0		259.4	1,757.3		1,863.1	1,699.9			1,751.7		1,765.5

CORRECTIONS TO PREVIOUS WATER BULLETINS

WATER BULLETIN NO. 26 - 1956

Page 53. RETURN FLOW TO THE RIO GRANDE AT PONIENTE DRAIN - West of Reynosa, Tamaulipas

In the textual heading under "EXTREME FLOWS FROM RECORDS": The Maximum marked "0" (mean daily) should be 3,810 on January 18, 1954 instead of 3,180 as shown.

Under "Average Flow in Second-Feet", the Yearly Maximum should be 191 in 1956 instead of 167 in 1953 as shown.

In the Period Summary, the Minimum Yearly acre-feet should be zero instead of 94,550 as shown.

Page 103. AVERAGE RAINFALL ON SUBDIVISIONS OF THE RIO GRANDE WATERSHED - IN INCHES
With Totals and Averages for the 86 Years 1871-1956, Inclusive

The figures listed below should be substituted for those shown for "Devils River":

Month	1956	Period Average
Jan.	.45	.67
Feb.	.17	.62
Mar.	T	1.14
Apr.	.48	1.79
May	.89	2.56
June	.23	2.73
July	.42	1.77
Aug.	.52	2.11
Sept.	.62	2.90
Oct.	2.44	2.11
Nov.	.18	1.64
Dec.	.25	1.07
Total	6.65	21.11

Pages 104 and 105. LOCATION OF RAINFALL STATIONS ON THE RIO GRANDE WATERSHED - In the United States

The Latitude for Adams Brothers Ranch should be 30° 10' instead of 20° 10' as shown.

The record for Kokernot Ranch - No. 2 began in 1949 instead of 1956 as shown.

The Longitude for J. F. Woodward Ranch should be 103° 36' instead of 103° 46' as shown.

The Elevation for Wuensche Farm should be 640 instead of 650 as shown.